SPECIAL ELECTRIC STREET RAILWAY EDITION.—III.

ILLUSTRATED ELECTRICAL REVIEW

A Journal of Scientific and Electrical Progress.

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VIEWS, NEWS AND INTERVIEWS.

The trolley has rolled its way into politics. In a recent issue the New York *Press* printed a political cartoon, showing a car on the Tammany Hall trolley line zipping along Fourteenth street. Richard Croker was pictured as the motorman and ex-Mayor Grant as the conductor. The Tammany tiger occupied the car and its tail served as the trolley pole. The tiger's tail had slipped off the trolley wire and Grant was making vigorous efforts to get it back again. The car had run over Silver Dollar Smith, Paddy Divver, Mayor Gilroy, Phil. Wissig and Bourke Cockran. The title of the cartoon was "Off its trolley!"

Tests by the Navy Department show that aluminum is not available for naval uses. It is reported that barnacles attach to it and that it corrodes in salt water.

Robert McCulloch, the well-known street railway man of St. Louis, read an interesting report at the Atlanta convention of the American Street Railway Association on "Mail, Express and Freight Service on Street Railway Cars." He sent out circulars asking for information on the subject. A man from the rural districts of Wisconsin proudly wrote, in answer to a circular regarding the carrying of mails, that "His road sometimes carried females too." There is one road down in North Carolina from which the statement was received that: "This here road is owned, directed, managed, superintended and driven by Yours Truly."

It is said that a New York cotton broker, a fine old Southern gentleman, is so polite that he takes off his hat while talking through the telephone.

During the trial of a suit by John Byrnes against the Brooklyn Heights, N. Y., Railroad Company for $10,000 damages for an alleged electric shock and consequent injuries, Lineman Thomas Banks swore that he often handled the live trolley wires without gloves and got shocks. He described these as merely slight, tingling sensations, similar to that of a galvanic battery. Foreman Oliver G. Stack testified: "I have reason to believe that I took the entire voltage of the Atlantic avenue system. I got it by making what the men call a 'jumper' of myself. We were putting in a section of wire and I picked up two ends, one live and one dead. I got the full charge. The best way I can describe the sensation is to say it is like an arm asleep."

Here's the very latest New York campaign story at Tim Campbell's expense: Dandy Jim Horbacher, it appears, left a fine silk umbrella at the Tim Campbell Campaign Club rooms the other night. Tim found it and called Dandy Jim up on the telephone.

"Hello, Dandy! Is that you?" Tim asked.

Dandy evidently answered yes, for the next question Tim asked was:

"Did yez leave an umbrella at the club, Dandy?"

Dandy must have said yes again, for Tim yelled:

"Ye did? and is this it?" holding the umbrella up at the telephone as he said it.

War news by cable from China costs the English papers $1.87 a word, and from Japan $2.60 a word.

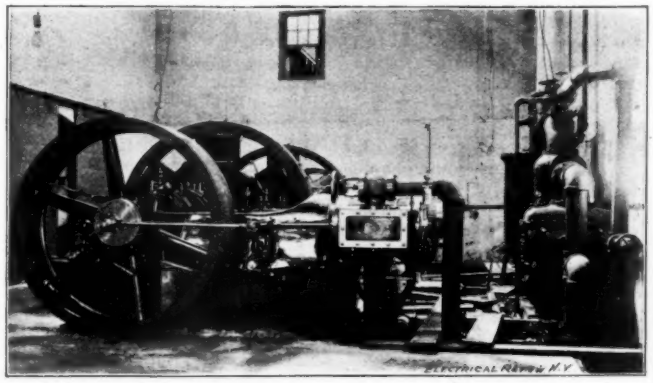


FIG. 1.—VIEW SHOWING BALL & WOOD ENGINES DIRECT CONNECTED TO GENERAL ELECTRIC GENERATORS IN THE POWER STATION OF THE POUGHKEEPSIE AND WAPPINGER'S FALLS ELECTRIC RAILWAY.—(SEE PAGE 220.)

OBITUARY.

Morton A. Church, superintendent of the Port Chester Electric Light and Gas Light Company, was found dead in bed at his home in Rye, N.Y., on October 1. The coroner's jury decided that he died from asphyxiation by coal gas, as his wife was found unconscious beside him. Mr. Church was 33 years old.

Hon. Samuel Winslow, twenty-second mayor of Worcester, Mass., died at his home in that city on October 21, aged 67. He was president of all the street railway companies whose electric lines radiate from Worcester. Mr. Winslow was the promulgator of the roller-skating craze and made a fortune out of the manufacture of the Winslow ice and roller skates.

James B. McGiffert, manager and secretary of the Suburban Electric Light Company, which furnishes electric light to Elizabeth, N. J., and all the towns on the line of the Jersey Central between that city and Plainfield, died on October 21 at the Elizabeth Hospital from typhoid fever. He was 37 years old. He went to Elizabeth four years ago and helped organize the Suburban Electric Light Company. He was one of the stockholders and incorporators of the Suburban Electric Railway Company.

THE ATLANTA CONVENTION.

ECHOES OF THE GREATEST GATHERING IN THE HISTORY OF THE STREET RAILWAY ASSOCIATION.

A WELL-MERITED WORD FOR THE ENTERPRISING EXHIBITORS—THE BANQUET IN DETAIL AND THE SPEECHES OF SPECIAL INTEREST — A STREET CAR FARE OF TWENTY-FIVE CENTS—SOME BRIGHT HITS BY THE ATLANTA REPORTERS—CONVENTION INCIDENTS OF AN INTERESTING NATURE PRESENTED AT MUCH LENGTH—MAJOR EVANS AND HIS CHRYSANTHEMUM —ADDITIONAL SOUVENIRS, RESOLUTIONS, EXHIBITS, ETC.

As chronicled in the ELECTRICAL REVIEW last week, a well-satisfied crowd of Atlanta visitors departed from that hospitable city Friday and Saturday, October 19 and 20, having been participants in one of the liveliest and most important conventions ever held by the American Street Railway Association. The valuable results of such a meeting of representative men will continue for many months to spread through the traction circles of America. These occasions are not only valuable because of the papers and discussions, but when so many practical men get together and quietly compare experiences and make suggestions face to face, the results cannot fail to be of great benefit to the owners and operators of all the street railways thus represented. It is to be hoped that every eligible street railway organization in the country will unite with this association, and also that they will see that their managers and superintendents are present at every convention.

In none of the fields where electricity has proven all-conquering does

the ELECTRICAL REVIEW take more pride and, we say it modestly, more credit, in the advance that has been made than in the important field of electric traction. Since the first commercial electric road was installed by F. J. Sprague at Richmond, Va., in 1887–88, the REVIEW has untiringly fostered this great electrical field, and feels amply repaid by the success that the progressiveness of the alert street railway men has brought about. There is much more to be done, and another great convention may be expected at Montreal a year later.

There are so many incidents of interest which occur to the historian in reviewing the proceedings, that one is tempted to leave the full report—printed on time in this journal last week—to speak for itself. Yet there were many things deserving of special mention.

The earnest manner with which the delegates listened to the papers and participated in the discussions showed a desire for the fullest knowledge that was most commendable. Also, the close investigation of everything exhibited, and their number was legion, bespoke a strong desire to keep up with modern appliances. As soon as the business meetings adjourned each day the delegates would swarm around the exhibitors and examine and question to their hearts content and to the satisfaction of the enterprising exhibitors. And it is this enterprise that should receive particular credit. The manufacturers and the supply houses of the country, at great expense and trouble, presented in machinery hall an exhibit that made everyone interested proud to belong to such a fraternity of enterprising men. For a period of only three days' duration was all this great industrial exhibition made, and we do not believe it was ever equaled when time, distance and expense are all considered. The ELECTRICAL REVIEW cordially congratulates every one of these progressive men, who thus showed their faith in their product and in the importance of the association. Their names should be recorded, and if any have been overlooked in the hurried rush of affairs at the convention we shall be greatly obliged if they should be sent us so we can publish the additional names and descriptions.

THE BANQUET.

There were many good things said at the large banquet given at the Kimball House, Thursday evening. The dinner was most excellent, and the service prompt and the speeches full of interest. President Payne presided, and introduced Mr. J. H. Stedman, who ably filled the roll of toastmaster. Hon. E. W. Palmer eloquently responded for "Atlanta," and Mr. C. D. Wyman for "Our Association," who made a number of suggestions, humorous and otherwise, valuable to the delegates in running their roads, especially the election of a secretary to entirely control his department and send calculations to different towns, and closed with a pleasant prophecy for the association's future.

Mr. Lewis Perrine, of Trenton, spoke wittily of "The Street Car as a Factor in Modern Civilization," and closed with a tribute to the generosity of Atlanta. Capt. H. Jackson spoke of "The Railroads and the Law." Hon. L. C. Levy eloquently spoke of "The New South," and "Our Common Country" was most ably presented by Hon. Fleming duBignon, of Savannah.

The toast of "The Technical Press," by Mr. J. H. McGraw, of the *Street Railway Journal*, was listened to attentively and applauded. Mr. McGraw said:

"The technical press has become a great power; it is everywhere, as the advertisers well know; it reaches after everything, and lets nothing escape; it is wide awake and progressive; it is both grave and gay, sublime and, sometimes, ridiculous; it rings up all the change from the advertiser, and its register is never out of repair; its conductors are polite to all wishing to be carried, and its inside space is never overcrowded—always room for one more.

"The technical press is enterprising. It is obliged to be. It always wants to do something for you, to help along the community in which it resides.

"In this respect, it reminds me of a story that is told of Mark Twain, who has a beautiful country place in Central New York. Mr. Twain, with characteristic liberality, decided to do something for the community in which he lived; so, in commemoration of the birth of his first child, he erected a stone watering trough on the roadside, and had the christian name of his child chiseled on the front of the trough. He followed up the good example until he had four troughs erected. The people of that community are anxious that Mr. and Mrs. Twain should be blessed with a very numerous family.

"The technical press is already a very numerous family indeed. The past few years have been very prolific in this respect, and as some people refuse to be guided by the light of experience, the future will, no doubt, do her full share of fool killing.

"The technical press is never satisfied. When it can't get a whole it takes a half or a quarter; like the shoemaker who cut off his dog's ears a little each day so that it would not hurt him too much.

"Sometimes the technical press goes off on a side issue in the shape of a souvenir or an anniversary number, like some of our esteemed electrical contemporaries. The street railway press, of course, would not do this! The reason for this is simply to make a noise and attract attention from the *aut scissors aut nullus*, of which the regular issue is largely composed. Of course, advertisers should not be expected to pay for space in souvenir editions!

"Some of the brightest minds in the realms of science, invention, engineering and finance, are directly or indirectly in the service of the technical press. The extent of this field and the possibilities of its future development are hardly appreciated even now.

"The technical press has now made continuous history in the street railway field for 10 years. It came into existence at the same time that Littell's thoroughbred Kentucky mules became famous; but unlike the mule, it cannot be suppressed. It has come to stay. It is a part of the industry. It has applauded your victories and shared your sorrows and defeats. It told the story when there were less than 500 roads in existence and less than $150,000,000 of money invested. It has helped you to wisely invest $300,000,000 more, until to-day there are 1,200 roads, a large majority of which, we are proud to say, are electric and cable. It has faithfully represented every important improvement and advance in the industry; and while it is true that the technical press owes its existence and prosperity to you, you should be always willing to give it a share of the credit for what has been accomplished, and to hold up its hands in the future in the good work yet remaining to be done.

"When your city fathers surlily refused to allow you to use salt to melt the snow and ice on your tracks, it was the chemical experts of the technical press who quietly suggested to you that 'chloride of sodium' was quite as efficient for your purposes, and would be less objectionable to the learned council aforesaid.

"When center bearing rails was the ideal roadbed construction from a street railway point of view, and side bearing rails a *sine quâ non* of municipalities, it was the legal and engineering talent in the employ of the technical press that suggested that you yield the demand for side bearing rails, 'except on grades,' and to leave the rest to your engineers, in the confident assurance that not a piece of absolutely level track can be found in the country.

"The technical press, however, does not claim to be omnipotent, and its perspicacity and legal acumen have limitations, so that it cannot claim credit for many of the brilliant things which you lawyers and business men have done. For example, who but the distinguished member from Rochester would have passed the resolution, I beg pardon, who but the Rochester Common Council would have passed the resolution compelling the street railway system to use wooden instead of iron poles, on account of the danger of grounding the current where iron poles were employed?

"I cannot take my seat until I thank our host and the good people of Atlanta for their most cordial and hearty hospitality. It is needless for me to say that we are glad to be with you on this occasion, that we rejoice at this opportunity of meeting our street railway brethren of the South face to face, and feel the warm grasp of your hand. We rejoice at what we have seen of your beautiful city of Atlanta, your public buildings, your parks and clubs, and that it has been yours to solve the problem of rapid transit most successfully.

"We cannot leave without paying a visit to the statue of that man who, by the way, was a distinguished representative of the press, who belonged not only to Atlanta and the South, but to the whole country as well—your own Grady.

"We rejoice at the prosperity and enterprise which is manifesting itself more and more throughout the entire South in the direction of street railways; we rejoice for the good feeling and bond of sympathy which unites the street railway men North and South, East and West in one common brotherhood; and above all do we rejoice that the times are ripe for a closer union and more liberal opinion of the people from all parts of the country toward each other. If Georgia and New York should clasp hands on the great principles of governmental policy, it would be unworthy of our common heritage to peril their political faith because of prejudice or environment. Whatever may have been the necessity for like minds in education, culture and doctrine to enlist under hostile banners thank God the occasion no longer exists. This was the spirit manifested in the homes of Jefferson and Madison. The Sage of Monticello and John Adams, each the founder of a great party, were bitter antagonists in the field, but spent the evenings of their days in mutual correspondence and labors for their common country."

Mr. Lucian Knight, a young reporter of the *Constitution*, responded most eloquently and charmingly for "The Local Press." It was an ideal burst of eloquence. The silence was only broken by the splendid tones of the young speaker and by the bursts of applause. Among other things Mr. Knight said:

"If you will excuse the platitude, we live in the brightest era of the world's development—an era that has witnessed the sublimest miracle since man became a living soul; for electricity on every hand is writing the peroration of the century. The pressure of a button now starts a factory into motion and causes a myriad flame to leap into a carnival of light. A single wire stretched along the highway carries from city to city the message of the human voice and guides the progress of the locomotive dashing along as if in the exercise of its own volition. Oceans have been wiped away and continents united until Europe lies across the common and Asia is beyond the forest that guards the frontier of the neighborhood. Science has illuminated the night with her soft witchery and pilfered the eternal birthrights of the stars. Like the moping owl, the moon herself has lodged complaint against the tresspasser that seeks to 'molest her ancient solitary reign.' * * * * *

"The newspaper goes into every country, traverses every ocean and catches into its columns the varied sunlight of every sky. It is intimate with toil and tribulation, partakes of the cares of every household, and is breathed upon by the sighs and sorrows, the glad and happy surprises of a billion readers. The events of the night before become the story of its pages and the tears and smiles, the murders and the accidents, the battles and the sieges of a planet are dealt to the merchant at his breakfast table to heighten the flavor of his morning meal." * * * *

The banquet ended at 2 A. M. with cheers for Joel Hurt and Atlanta.

THE BARBECUE.

This interesting event occurred Friday afternoon at Ponce de Leon, a point easily reached by the electric cars. Some 600 were present and enjoyed the roasted sheep and shotes, the Brunswick stew and cool lager. The repast was served on wooden tables, around which all stood and were rapidly served in their wooden plates by a score or more of colored boys. Capt. Robert Lowrey, a prominent citizen of Atlanta, took charge of affairs, and it goes without saying that it was a pronounced success and hugely enjoyed by every visitor.

CONVENTION INCIDENTS.

The visitors were all given a neat little book of street car tickets, containing 20 fares. This was with the compliments of the ever-thoughtful Atlanta Consolidated Street Railway Company and the tickets were good on every line in the city.

The street car companies in all the cities visited, with one exception, ex-

tended the courtesies of their line to the street railway attendants. The one exception was the Asheville and Sulphur Springs Street Railway Company running from the depot into the city, where the fare, instead of being five cents per passenger, was jumped to 25 cents each for some unexplained reason. Perhaps the company didn't want the street railway delegates to ride on its poorly constructed line—the said delegates certainly never will if they can avoid it.

The Sperry electric brake attracted a great deal of attention and was exhibited on a car running between the hotels and the convention grounds. Passes giving the privilege to examine the equipment were issued by Mr. S. H. Rodgers, general manager of the Sperry Electric Railway Company, and were in much demand.

A committee on presentation was selected by the travelers on the Norfolk and Western Railway to carry out the sentiment of the resolutions which appear below. The committee is composed of Mr. E. Peckham, chairman; T. C. Martin, secretary, and W. J. Richardson, J. R. Beteem, J. H. McGraw, W. S. Silver and H. C. Evans. The resolutions are as follows:

NATURAL BRIDGE, VA., October 21, 1894.

Whereas, A large number of those attending the Atlanta Convention of the American Street Railway Association have traveled to and from that city over the Shenandoah route, and

Whereas, The unqualified pleasure and the brilliant success of the railway trip have been due to the unwearied efforts and thoughtful supervision of Mr. Leroy J. Ellis, eastern passenger agent of the Norfolk and Western Railway; be it therefore

Resolved, That the hearty thanks of the passengers by the special train, personally conducted by Mr. Ellis, be and are hereby extended to that gentleman for his unremitting attention to their comfort and his prompt acquiescence in any suggestion that could be met.

Resolved, Further, that Mr. Ellis be and is hereby congratulated upon the striking punctuality in the adherence to the train schedule, as evidencing the high standard of railroad efficiency in the New South, and

Resolved, That a copy of these resolutions be engrossed and presented by a committee to Mr. Ellis, together with a souvenir that may serve to remind him of the occasion as well as of the high esteem in which the street railway men and street railway supply men hold a typical steam railroad man.

The souvenir mentioned is a solid silver pitcher.

The Sterling Supply and Manufacturing Company, of New York, gave away a large number of unique and useful souvenirs. They were blotters in the shape of a miniature street roller, the handle of which contained a few pertinent remarks about the excellent products of the Sterling company. Mr. J. H. Carson, the good-looking representative of the company, was much sought for while these souvenirs were being passed around.

Mr. Russell B. Harrison, son of the ex-president, was an earnest, quiet listener to the proceedings and observer of all the exhibits. The people of Atlanta took quiet an interest in Mr. Harrison. His election to the vice-presidency was due to his successful and progressive work in the street railway field.

The picture of the jovial Major H. C. Evans in the *Constitution* was promptly recognized. It was characteristic as to pose and *boutonniere*.

J. W. Godfrey, of New York, was one of the Atlanta visitors, and renewed acquaintances with many electrical men of that city.

Among the newspaper men in attendance, besides those with headquarters mentioned last week, were C. E. Stump, of the *Street Railway Gazette;* E. A. Simmons, of the *Railroad Gazette;* W. J. Johnston and M. J. Sullivan, of the *Electrical World;* T. C. Martin, of the *Electrical Engineer;* H. M. Davis and Horatio A. Foster, of *Electric Power;* J. W. Nagle and F. W. Vandegrift, of the *Car;* and Forman Collins, of the *Western Electrician*. The history of this convention should be well written.

There was a very good attendance of street railway men of the South. Prominent among these was Col. D. B. Dyer, of Augusta, Ga.

Blue lead pencils were the very acceptable souvenirs given out by Mr. Arthur Partridge, of St. Louis.

Carlton & Kissam, the street car advertisers, were said to have distributed a very neat pocket knife. This is not a hint—for there are other knives.

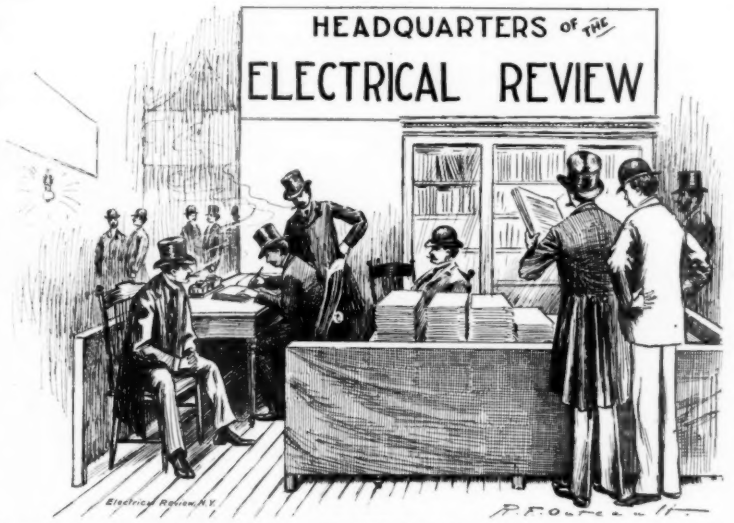
The honor of being the largest man at the convention apparently rested between Baird, of the Eddy Electric Company, and Paige, of the Paige Iron Works.

The exhibition of the Western Telephone Construction Company, consisting of a complete talking outfit, attracted much favorable attention.

Mr. Max Berg ably represented the enterprising Wallace Electric Company, of Chicago. This company is fast winning a great record in the line of supplying important and reliable electric railway supplies.

Prof. Richard O. Heinrichs, the courteous and educated representative of the widely known Weston Electrical Instrument Company, was one of the visitors whose acquaintance seemed unlimited. Mr. Heinrichs found many new friends of his company among the street railway representatives.

The Stirling company's model boiler showing the circulation of water



SKETCH SHOWING HEADQUARTERS OF THE "ELECTRICAL REVIEW" AT THE ATLANTA CONVENTION OF THE AMERICAN STREET RAILWAY ASSOCIATION.

was a point of continued interest. This company is rapidly forging to the front and will soon distance the older boiler companies if they "don't watch out."

The neat leather bound memorandum books given away as souvenirs by Mr. Chas. Schieren, Jr., were among the most acceptable of gifts.

Elmer A. Sperry, the eminent young electrician, was warmly welcomed by many old-time friends. Although a studious scientist Mr. Sperry found time to note and confess admiration for the progress of Atlanta and the attractions of her beautiful ladies and enterprise of her brave men.

Mr. John A. Brill was pronounced one of the handsomest men at the convention by several bright-eyed Atlantians, who were proper judges. The Philadelphia contingent, all in all, was one of the finest.

It is a noticeable feature that those journals that failed in appreciating in advance the importance of this convention—and consequently fell 'way to the rear—failed also to appreciate it in their reports the following week. Shame on such littleness!

Mr. John A. Seely had to tell over and over again his story of the work of street railway construction he is putting down at Syracuse.

Mr. J. G. White, of the White-Crosby company, of Baltimore, was another of the several distinguished and successful engineers and contractors in attendance. He is a very busy man.

The popular Buckeye engine, made at Salem, O., had an earnest and wide-awake advocate in Mr. G. A. Barnard.

Mr. F. X. Cicott's good-looking presence spoke volumes for that highly successful New England house, Pettingell-Andrews company.

Mr. G. L. Colgate, of New York, was one of the most active men of the convention, and his "pole paint" greeting was heard on all sides. Mr. Colgate does not confine himself to this one branch alone. His house does a large business in supplies of a special and important nature.

General Superintendent McCall, of the Chattanooga Electric Railway Company, is one of the youngest men in the business, yet he successfully operates some 35 miles of road. Mr. McCall extended many courtesies to the railway visitors to his city.

AMONG THE REPORTERS.

A number of excellent bits of reporting appeared in the *Constitution*. We select a few at random, largely of a personal nature. This one will interest New England:

About 50 of the travelers were from New England, and styled themselves the "Odessa Pilgrims." From all accounts they were a very lively party, but Colonel Cunningham, the president, preserved the dignity fairly well. Vice-president Breed having lost the large sum of $2.25 in the game of "loo" to Second Vice-president Odell, jokingly insisted that the cards had been fixed and his refusal to settle gave the Massachusetts boys opportunity to call in a citizen of Greensboro, who, in the guise of county sheriff, compelled settlement and exacted his fee of $10, and everybody enjoyed good cigars immediately after.

The next, just as published, will be sure to be recognized:

Some complaint was made of the water while the party was passing through South Carolina, as all had not been as thoughtful in anticipating the Tillman restrictions as had been Captain Carden of the Akonite Company.

The following well deserved mention appeared in the *Constitution* Wednesday:

One of the quietly influential men at the street railway convention is Mr. James H. McGraw, president of the publishing company which owns and conducts the *Street Railway Journal*. Mr. McGraw holds a unique and highly responsible position in the street railway industry. For more than 10 years he has been deeply concerned in the welfare of the industry, has watched its development, promoted its best aims and been intimate in the counsels of street railway managers, engineers and inventors.

The next is undoubtedly true, as hundreds of circular-besprinkled waste baskets testify:

Mr. Johnson, of the *Electrical World*, is thorough and painstaking, and he has furnished those engaged in electrical occupations much fine literature.

Of the next we are not so sure:

Mr. Charles W. Price is probably one of the best posted editors in his line of journalism. He understands the technique of electrical journalism of every branch of electrical development, and is regarded as authority among those who are engaged in any business in which electricity is a factor at all. Mr. Price is known to a large number of Atlantians, having been here with the International Press League last May, when it met here. He is extremely popular among the New York newspaper men.

Mr. Nagle was complimented:

Mr. James W. Nagle, manager of the *Car*, a street car publication, and one of the best journals of the kind printed, is in the city. Mr. Nagle was one of the gentlemen who came to Atlanta in 1880, and began the work which resulted in the cotton exposition.

A "tempting retreat" was thus discovered:

Mr. H. G. Tuckerman, representing the ELECTRICAL REVIEW, is getting up a full story about the exhibitors present. The ELECTRICAL REVIEW is one of the leading papers represented in the hall and the headquarters of this journal present a very tempting retreat to the passerby.

This is the picture of Major H. C. Evans, as it appeared in the *Constitution*, "whose conviviality is only equaled by the size of his chrysanthemum:"

MAJOR H. C. EVANS AS HE APPEARED TO THE ATLANTA ARTIST.

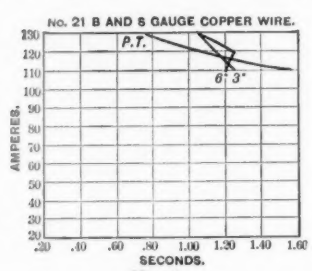
The following pleasant mention of artist Outcault appeared:

About the last man that one would expect to find at a convention like that of the street railway men is a young and clever artist, without any special taste for such practical things as street car lines and electrical apparatus. There is such a man in Atlanta to attend the convention, however, and he has done no end of good work in illustrating street railway periodicals. He is Dick Outcault, of New York, and he is quite a pleasant fellow. Outcault is not only a good artist, but a clever and entertaining fellow, and many of the visiting street car managers are glad to have him around for his wit and good cheer.

DESTRUCTIVE ARCING OF FIVE HUNDRED VOLT FUSES.

SPECIAL PAPER READ BEFORE THE AMERICAN STREET RAILWAY ASSOCIATION, ATLANTA, GA., OCTOBER 18, 1894, BY W. E. HARRINGTON.

The destructive effects of the arc accompanying the opening of 500 volt circuits with switches, lightning arresters and fuses, has led the writer to inquire into this phenomena, particularly in reference to fuse practice. A series of carefully conducted tests were made to find the relation between the fusing currents of different size copper wires ranging from No. 30 to No. 21, Brown & Sharpe gauge, the time required to open the circuit and to what extent the arc contributed to the time required.



No. 1.

An inclined trackway was constructed, having two copper tracks upon which a traveler consisting of a block of hard wood having copper plates in contact with the tracks could run, the circuit from rail to rail of track being completed through an electro-magnet on top of the traveler. Parallel with and along side of the track was a raised board on which a paper was attached.

An impress was made on paper by a lever on the traveler when released by electro-magnet, owing to stoppage of current.

Before tests were made the trackway was carefully calibrated as regards time for traveler to go from top to bottom and the intermediate points, resulting in knowing the time to $\frac{1}{100}$ of a second.

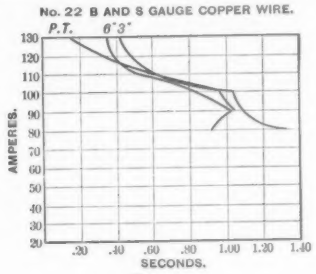
The tests were conducted across the bus bars of switchboard of the Camden Horse Railroad Company, Camden, N. J. Average voltage, 515 volts.

Before throwing a fuse in circuit, a water rheostat was set, using a Weston ammeter for this purpose, so that the current desired would flow through the fuse, when the circuit was completed by the traveler on the trackway.

The different size fuse wires were subject to the following limitations: The time of the traveler running full length on the trackway, 1.5 seconds; the current ranging from 20 to 130 amperes in 10 ampere steps.

The smaller fuse wires would fuse with the minimum current of 20 amperes, and in all instances inside of the 1.5 arc limit, consequently, the curves show a wide range; but in the larger size wires a greater current was required to fuse the wires in the 1.5 second limitation, consequently, the curves given for the larger fuse wires show less and less range as the fuse wires increase in size.

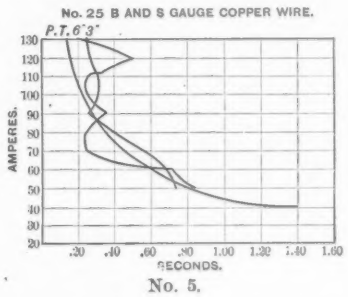
In order to strike an average the tests were repeated under similar conditions as regards current and gauge wire with a three inch horizontal fuse, a six inch vertical fuse, both of which were connected to a standard form of fuse block, also a four and one-half inch fuse, the average in length of the three inch and six inch was employed connected in a specially constructed fuse block, which absolutely prevented any arcing of the terminals. In other words, the fusing of the fuse wire could not burn the terminals to which it was attached.



No. 2.

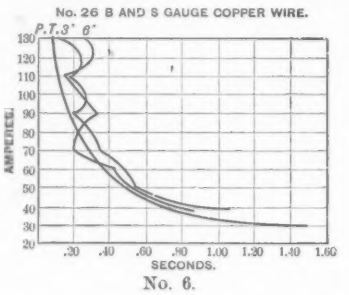
The results recorded graphically in the following charts give, therefore, the time required in fractions of a second for the circuit to be opened under identically similar conditions as regards current and gauge of wire for a three inch, a six inch unprotected and a four and one-half inch protected terminal fuse.

The curves as given in chart No. 8 for No. 28 Brown & Sharpe copper wire illustrates excellently the erratic character of the fusing of wires under conditions as observed in the practice of to-day.



No. 5.

The time required to open a protected terminal fuse wire becomes less and less as current increases and grows less regularly, showing that a regular law is followed. The curve is a hyperbola having its asymptotes for its axes, and the equation for it is $xy=13$ for No. 28 copper. Whereas, the two unprotected terminal fuses are uncertain and show in a very pronounced manner wherein the terminals contribute to this end, the conclusion one is forced to draw is that a fuse wire in practice, when it fuses, does not do as it was intended to—open the circuit—but establishes a condition, though the time may be limited, wherein the terminals act as a magazine to furnish the gas through which the circuit is continued. The curves throughout do not show any superiority of the six inch fuse over the three inch. Looking at the results in comparison, as given by the Board of Fire Underwriters, which is attached to this paper, the very point they should have observed was overlooked, to wit, the continuance of the arc through but a short period of time at the expense of the terminals, and the possibility of the vicious gas thus generated, coming in contact with other circuits and establishing other and more serious conditions, such as short circuits and possible fires.



No. 6.

Not to be misunderstood, while the tests, as are herein recorded, show no superiority of the six inch unprotected terminal fuse wire over the three inch unprotected terminal fuse wire, the six inch fuse wire is unquestionably safer when conditions are more extreme, such as, for instance, when a short circuit occurs.

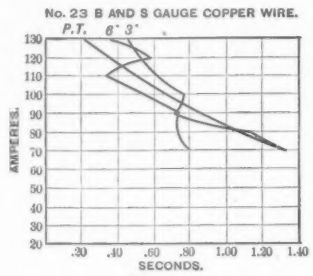
The determining factor in this matter of fuses is: What are the conditions required to protect against absolute short circuits across the bus bars of a large power station 500 volt switchboard? Tests are conducted showing how fuses act under conditions that are predetermined, certain currents which are made to flow, etc.; but you never see anything published or advice given in this matter of fuses for the condition which really occurs the most frequently, that is, absolute short circuits. The Board of Fire Underwriters' report, herewith attached, gives the different length fuse blocks required for 10 amperes, 20, 30, 40 and so on.

Now the requirements and limitations as prescribed in the Board of Fire Underwriters' report are true and perfectly safe when the fuse "blows" under the conditions as outlined in the tests, as made by the committee appointed to make such tests.

But on an absolute short circuit across bus bars, as above stated, a 10 ampere fuse block constructed as specified will, instead of protecting one when most in need of such protection, burn up in the most vicious way and will open magnetic cut-outs in a power station requiring currents up to a 1,000 amperes to open. Understand, the fuse does not itself do this, but the arc established at the expense of the terminals is the immediate and sole cause, and the circuit must be opened elsewhere. As stated, the magnetic cut-outs, above referred to, open the circuit.

This matter of arbitrarily adopting a series of fixed dimensions and conditions, under which fuses are to be used, is absurd and is very similar to a case which came up on the railway with which I am connected.

A man came to the president with a car fender, which he was anxious to have adopted. After expatiating for some time upon its merits, it finally came out that under certain conditions the fender was really good, and if a person should fall in one particular way the fender would surely save him; and he promised to send printed instructions with each fender, so that the people could be instructed to fall properly.



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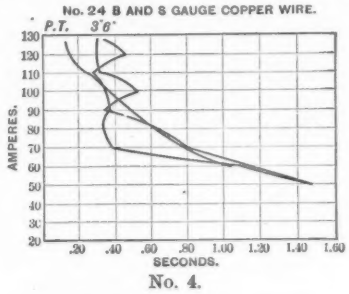


No. 4.

The conclusions one is forced to draw from the above tests and the general literature upon the subject of fuses, are as follows:

1. The proper and only fuse block to be used is one having protected terminals.

2. That fuse blocks should be furnished so that the terminals would not be burned under conditions approaching an absolute short circuit across the bus bars of a 500 volt power station.

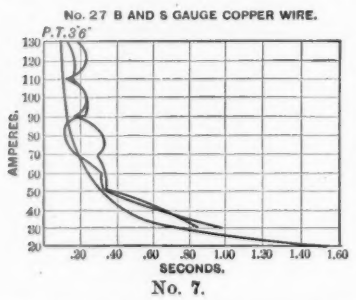
3. The magnetic cut-outs are immeasurably preferable under all circumstances.

APPENDIX. — REPORT OF UNDERWRITERS' INTERNATIONAL ELECTRIC ASSOCIATION.

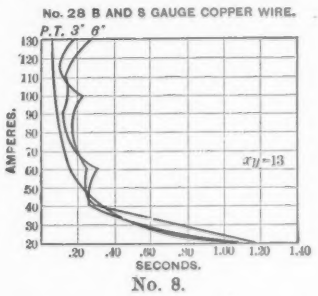
DATA.

The following data gives the maximum length between terminals at which arcing occurs, the minimum lengths at which no arcing was observed, and the safe lengths on 500 volt circuits for fuses, whose melting points are indentical with the various current strengths designated:

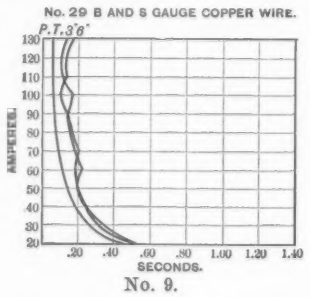
Amperes.	Maximum length at which arcing occurred.	Maximum length at which no arc was observed.	Safe lengths.
10	¼ inch.	¼ inch.	1 inch.
20	½ "	¾ "	2 "
30	2 "	2 "	2¾ "
40	2 "	2¼ "	3½ "
50	2¼ "	2½ "	3½ "
60	3 "	3¼ "	3¾ "
70	3 "	3¼ "	4 "
80	3¼ "	3½ "	4¼ "
90	3½ "	3¾ "	4⅝ "
100	3¾ "	4 "	4½ "



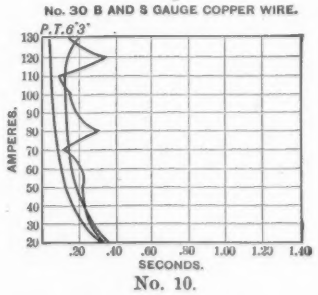
No. 7.



No. 8.



No. 9.



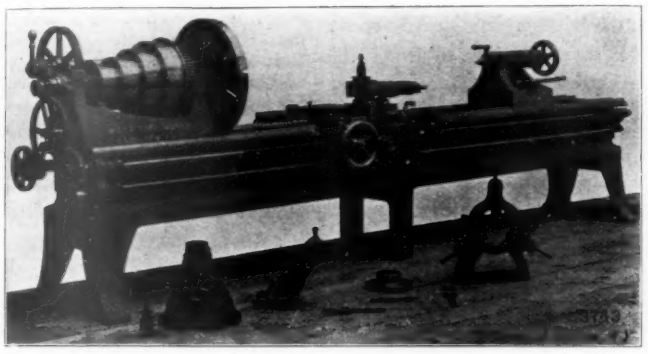
No. 10.

Dart-George.

Mr. William Crary Dart, of the Rhode Island Tool Company, and Miss Grace Thomson George were married at the home of the bride's father, Providence, R. I., October 18. The ELECTRICAL REVIEW extends its sincere congratulations.

Niles Tool Works' Engine Lathe.

The illustration presented herewith shows a 24 inch engine lathe made by the Niles Tool Works, of Hamilton, Ohio. The following is a brief description of the machine:



THE NILES TOOL WORKS' 24 INCH ENGINE LATHE.

Swings 24 inches diameter over the ways and 16½ inches diameter over the carriage. The cone pulley has four steps, ranging from seven inches to 15½ inches diameter for three and one-half inch belt and is perfectly balanced. An interior sleeve gives it a continuous bearing its whole length and thus prevents it from wearing loose in the spindle.

Spindle is made of best cast steel and has long bearings running in composition boxes made of gun metal. Ample provision is made for any wear. The head casting is underneath the cone, which adds materially to its weight and strength. The back gearing is strong.

The carriage is arranged so that work can readily be secured for boring, etc. It has bearing 28 inches long, accurately scraped to bed shear full length of carriage, and being secured to bed by gibs, there is no possibility of its tilting.

The independent automatic cross and longitudinal feeds are simple in construction and very efficient. The screw cutting nut is engaged and disengaged instantly by cam. All sliding surfaces are fitted by scraping, no emery being used for this purpose. The handles, nuts and small parts are made of wrought iron and case-hardened, where subject to wear.

The feed is by gears of cone belt with ample changes.

The lathe is furnished with necessary change gears, full set or wrenches, steady and follower rests, countershafts with adjustable hangers, variable centering and traveling back rest, large and small face-plate and all that is necessary to make a lathe complete.

The West End Street Railway Company's Special Cars.

The West End Street Railway Company, of Boston, has recently added to its equipment two special cars which may be chartered for "trolley parties," now so popular in other cities, for excursions to any points of interest on the lines of the West End Railway or for special parties to balls, theaters, weddings or similar events. An exterior and interior view of one of these cars is shown in the accompanying illustrations. The cars are known as "924" and "925."

The car bodies are 20 feet long by seven feet four inches wide and were built by the J. M. Jones Sons, of West Troy, N. Y. They are mounted on "West End" trucks built by the Laconia Car Company, of Laconia, N. H. The motors on No. 924 are 25 horse-power each, furnished by the Westinghouse Electric and Manufacturing Company. Those on No. 925 are 25 horse-power each, furnished by the General Electric Company. The controlling mechanism of both cars was furnished by the General Electric Company.

The draperies were furnished by Messrs. A. H. Davenport & Company, of Boston; the carpets by Messrs. Torrey, Bright & Capen, of Boston; the chairs (20 in each car) were furnished by the Wakefield Rattan Company, of Boston and Wakefield.

These cars were equipped with motors and electrical mechanism at the shops of the West End Street Railway Company.

FIG. 1.—THE TROLLEY PARTY CAR OF THE WEST END STREET RAILWAY, BOSTON.

SELF-MOTIVE CARRIAGES.

THE PRIZE WINNERS IN THE "PETIT JOURNAL" COMPETITION.

Our London namesake prints the following brief description, translated from *La Nature*, of the self-motive carriages that gained first prizes in the competition organized by the *Petit Journal*, of Paris.

Messrs. Panhard & Levassor's petroleum carriages, with two seats and four seats (first prize, divided with the sons of Messrs. Peugeot, 2,500 francs). Four of these carriages were entered for the competition, and all arrived at Rouen in less than 11 hours. They were all propelled by the gasoline motor of the Daimler type, with two cylinders, which were placed in the fore part of the vehicle, and thus rendered easily accessible. This motor, the axle of which is parallel to that of the carriage, turns at a constant angular speed of 700 revolutions per minute, and works the hind wheels by a friction pulley and a system of gearing which can be readily manipulated by the driver by means of a pedal that allows of three different normal speeds of about 6, 12 and 18 kilometers per hour. The powerful brake of the Lemoine type is worked by a pedal. This brake acts on the intermediate axle, thus avoiding the wear and the slipping of the india rubber tires with which the wheels of the carriage are often furnished. In case of emergency, or for steep inclines, the wheels are acted upon directly by a brake worked by a lever placed at the right of the carriage, within reach of the driver's hand. The manipulation of the brakes automatically disengages the motor, which continues to turn, notwithstanding the stopping of the carriage. We might mention many other ingenious arrangements with regard to the directing of the vehicle, the starting of the gasoline motor, the carburetting apparatus, the mode of preventing the noise caused by the action of the motor, but we have not space for all these details, and can only say a few words as to the general character of the vehicle. The weight of a carriage with two seats, when ready to start, is about 700 kilogrammes; in the carriages with four seats it amounts to 800. The power of the motor in the first is 240 kilogrammes per second, in the second from 280 to 300.

The cooling of the cylinders of the motor is effected by a circulation of water contained in a reservoir holding 40 litres. This water becomes heated and evaporates, especially in Summer, and must, therefore, be replaced at the rate of seven to ten litres per hour. The gasoline used in the Daimler motor has a density of .7 to .705, the reservoir which contains it and which is placed in the fore part of the carriage is sufficient for a journey of 80 kilometers, but by using an additional reservoir behind a journey of more than 300 kilometers might be made. The mean consumption is about one litre for 10 kilometers.

It is not within our province to speak here in praise of Messrs. Panhard & Levassor's carriages, or to dwell upon their advantages: roominess, speed, endurance, comfort, etc. The result of the competition speaks for itself.

Cab with three seats and phæton with four seats (first prize, shared with Messrs. Panhard & Levassor, 2,500 francs). The principal difference between Messrs. Panhard & Levassor's carriages and those of Messrs. Peugeot lies in the place assigned to the motor, which in this case is in the hind part of the vehicle. Their advantages are equal to those of the carriages with which the first prize has been shared.

From this brief description, and judging by the carriages that contained prizes or that fulfilled more or less satisfactorily the conditions of the competition, we are led to the conclusion that the steam motor is far inferior to the gasoline motor as a means of propulsion without danger, suited to the convenience of travelers, and not too expensive. Without having yet come altogether within the reach of the tourist and the trader, the gasoline carriage has certainly entered the domain of practical application; the apparatus used are being improved every day, thanks to the teachings of experience, small defects disappear, the mechanism is simplified, and the petroleum carriage will soon have attained the highest degree of perfection of which it is capable. It would be rash, writes M. Hospitalier, to say or even to hope that it will prove to be the self-motive carriage of the future, but it has before it a vast field of application, of which the *Petit Journal* competition has clearly shown the value.

FIG. 2.—EXTERIOR VIEW OF PARTY CAR.

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Keep your trolley wheel in good order.

The Brooklyn Bridge cable cars are to be lighted with electricity. To make the job complete electric power should supplant the cable as the operating force.

Remember this prediction of the ELECTRICAL REVIEW: The year 1895 will be a record breaker in electrical construction and development, especially in the railway field.

It requires a trolley car to draw rapid transit passengers; a dentist to draw a tooth; a waiter to draw a cork; an artist to draw a picture; an electric light sign to draw a crowd and an advertisement in the ELECTRICAL REVIEW to draw trade.

Several "outside" telephone manufacturers are looking forward with no little anxiety to the decision in the Berliner case, which may be expected at any time. One "outsider" has the temerity to claim that a decision either way will benefit him.

The ELECTRICAL REVIEW appeared last week with a complete report of the convention from 24 to 48 hours ahead of its contemporaries, and has received many very flattering compliments over its prompt and excellent publication from the street railway fraternity.

Patience is a virtue which is just now of great value to the manufacturer. Business is improving, but not rapidly enough to please the impatient. The ground lost during two years of depression cannot be regained in a few months. We must all hold on tight, help each other and look and talk cheerfully.

A CONTEMPORARY ON THE CONVENTION.

Our usually even contemporary, the *Electrical Engineer*, seems to have been suddenly seized with a severe attact of dyspepsia, and the Atlanta Street Railway Convention is the unexpectedly large meal that caused this biting indigestion. A half column editorial is devoted to criticising everything above, below and around the convention—and then with beautiful inconsistency some two columns are devoted to interesting and intelligent descriptions of "striking features." On second thought, our good neigbor may decide there was not very much wrong with the convention, but there may have been some miscalculation in its own advance preparation for handling these important proceedings satisfactorily. *Hinc illae lachrymae.*

A press dispatch from Utica, N. Y., dated October 25, is as follows:

Stewart A. England, aged 17 years, was instantly killed to-night by a shock of electricity received from the combination knob of Jeweler Bernard Goldstein's safe. Goldstein had connected the safe with the wire furnishing current to the motor running his lathe, as a protection against burglars. England and a companion were in the store examining some goods and the latter dared England to touch the knob. He touched the combination and immediately fell dead.

Although many bright minds are at work in the electrical field, none has yet discovered a method of protecting damphools from the effects of electricity. We assert that three-fourths of the electrical accidents reported are the result of the victim's own carelessness.

The next big event in the electrical field will be the convention of the National Electric Light Association, which will meet at Cleveland, Ohio, in February. A further discussion of the merits of large size arc dynamos, several of which have been put on the market in the last few months, would be interesting and valuable. The recent experience of the early advocates of 100 lighters and 125 lighters may contain something which their more conservative brethren would be glad to hear.

A St. Louis paper says that "everything is in the Populist platform except a demand that gas meters and circus bills shall tell the truth. Even a Populist does not expect an electric light meter to register anything but a guess." This is a shot at a meritorious invention quite unworthy of a paper supported in a city where electricity is so largely used. It has been demonstrated that the meter system is the most economical of any, from the customer's standpoint.

Activity in the incandescent lamp field continues in spite of the rapid advances made in the introduction of arc lamps for incandescent circuits. Decorative effects combining both these types of illumination are becoming more popular every day, and doubtless during the Christmas holidays many novel and taking designs will be introduced.

Life on a cable repairing steamer is at all times interesting but often becomes dangerous. This was the case last week when the steamer "Faraday" had to put into St. John on account of severe storms at sea which interfered with her work.

Press dispatches state that Mr. Edison is sending from his iron mines at Ogden, N. J., samples of "electric sand" for trial as an accessory to street car brakes to effect quick stops. We hope the article has merit—if this report is true.

The English Railroad Guard and the American Conductor.

The guard is found on the station platforms, where he looks at your ticket, opens and closes the door of the compartment, will try to see you well placed, according to your class, then hops into his van, and goes with the train on your journey. He is by no means the important person that the conductor is in the United States, for he has no opportunity to sit with the passengers, to talk politics, or horses, or railroads. He never rises to the rank of captain, as all conductors do in our Southern States. He may become a Knight Templar, for all I know, but I never saw him with his waistcoat ablaze with the symbols of that order which so often decorate our own conductors. Doubtless in private life he is a man of influence in his neighborhood, but on duty he is a quiet servant, and his relations with the public are purely those of business. He is a tidy man in blue cloth uniform with white metal buttons, and often wears a broad patent-leather strap over one shoulder with white buckle and ornaments. He sometimes carries a small bag, presumably for such papers as he needs to have, and is provided with a green flag to wave to the engineman as a signal to start the train. Altogether he is a simple, efficient, and civil official, and just here is a striking contrast between the men of the two countries. On the English railroads one never sees the conductor or ticket-seller, who scorns you if you ask a question, and gives the minimum of information with the maximum of brusqueness; and one never sees the usher who stands in the gateway and bellows in inarticulate pride, then turns a quid in his cheek and squirts tobacco juice into a corner.—From "English Railroad Methods," by Col. H. G. Prout, in the November *Scribner*.

PERSONAL.

Mr. Charles R. Huntley, general manager of the Buffalo General Electric Company, was in New York a few days ago.

Mr. Belden, of Belden & Seely, railroad contractors of Syracuse, N. Y., was among last week's visitors to New York.

Mr. Henry Hine, general manager of the Stanley Electric Manufacturing Company, Pittsfield, Mass., was among last week's visitors to New York. Mr. Hine says that his company has many orders on hand and is very busy.

Mr. Stephen D. Field, the well-known inventor, visited New York last week. Mr. Field is now a resident of Boston, where his son is pursuing the course in electrical engineering at the Massachusetts Institute of Technology.

Judge Haight, who is a candidate for the Court of Appeals, is a very popular gentleman and has many admiring friends in electrical circles. Judge Haight's record as a jurist is of the best, and personally he is a charming gentleman.

Electric Lights For Brooklyn Bridge Cable Cars.

The oil lamps on the New York and Brooklyn Bridge cable cars will be replaced with electric lights within three months. At a special meeting of the bridge trustees, held last Thursday, three bids for installing the plant were received, one being from the Electrical and Mechanical Engineering and Trading Company, of New York, and two from the General Electric Company. As no checks accompanied the latter they were not considered. The contract was awarded to the Electrical and Mechanical Engineering and Trading Company. There are to be ten lights, each of 16 candle-power, in each of the 60 cars. For the plant the company is to receive $18,135, and the cost of maintenance will be $1,350 a year. The plant will consist of two high speed automatic cut off engines, each engine driving a multipolar direct-connected generator. The generating plant will be located in the power station at the Brooklyn end of the Bridge.

The specifications drawn by Chief Engineer Martin, under which the contract has been awarded, were exceedingly rigid in every detail, requiring the best method of construction that is known at this stage of the art. After the most careful investigation of plans and details of construction, furnished by Mr. Vail, of the above company, the contract has been awarded as stated.

American Institute of Electrical Engineers.

At the meeting of council held at 12 West Thirty-first street, October 17, 21 associate members were elected.

At the Institute meeting in the evening, Professor Houston in the chair, a paper was presented by Lieut. Samuel Reber, of Fort Riley, Kansas, on the "Theory of Two and Three Phase Motors." The paper having been printed in advance it was read by title by the secretary and the discussion opened by Dr. M. I. Pupin. A paper was also presented by Mr. Charles P. Steinmetz, of Schenectady, on the "Theory of the Synchronous Motor." Both papers were discussed by Messrs. Kennelly, Pupin and Steinmetz. Seventy members and visitors were present.

National Electric Light Association.

As the result of a letter ballot recently taken, the action of the Executive Committee of the National Electric Light Association at a meeting held in New York, September 11, in selecting Cleveland as the place for holding the next convention, has been confirmed; so it is now definitely settled that Cleveland, Ohio, is the place and February 19, 20, and 21, 1895, the time.

Secretary Porter is already at work selecting subjects for papers to be read at the Cleveland meeting, and will doubtless be glad of any suggestions in the matter.

Mr. H. H. Harrison, of Baltimore, was in New York last week.

Wall Street and the Electrical Stock Market.

The business world is showing signs of modern improvement. Owing to the interdependence of one industry upon another, any movement towards activity becomes accelerated as it gains in momentum. It is for this reason that capitalists and business men are growing more hopeful. Wall street is at a standstill. Its only occupation appears to be a study of conditions. The election boom expected to materialize this week is in default. The little tendency, early manifest, towards a bull movement was checked by fears of gold exports created by high sterling exchange. It is needless to say the bears played this for all it was worth, and on Friday, when it became apparent that no gold would go, they discovered another bug-a-boo in the form of "demoralization in the coal trade." This did not last long and they are now, for the time being, at least, out of ammunition. Their tactics have consisted of attacks on some one stock more vulnerable than the rest for its effect on the general list. In this capacity General Electric came in for more or less of their undesirable attention. The lowest point touched in the week was 34. Its friends rallied to its support and have accumulated heavily of the stock at bottom figures. A leading officer of the company informs me that President Coffin has not sold a share of his stock at these figures, reports to the contrary notwithstanding. It is certain that no more will be taken, at least before Spring, looking towards a correction in the capital stock impairment, and, until such action, there will be no dividends declared upon the cumulative preferred or common stocks. The surplus, I am told, is being used as fast as it accrues in buying the debenture bonds of the company outstanding, when they can be secured at advantageous figures. No unprejudiced interest claims that the company's business is not good. I am told by the best authority that it is 100 per cent better than it was a year ago in October, and that it is steadily improving. To be sure, October, last year, was one of the worst months in its history. What company can make a similar showing?

Apropos of an employment of the General Electric surplus, it must be borne in mind that the dividend on the preferred stock is cumulative at the rate of 7 per cent per annum. The amount outstanding is $4,252,000, and on January 1, 1895, there will be 10½ per cent due, or $446,460.

The General Electric debenture 5's, whose interest of 2½ per cent is due in December, are quoted around 89. The lowest point at which they sold this year was 68 in January, the highest 98 in August.

In general it can be said that the electrical stocks are steady at values which compare favorably with those of the better class of industrial stocks. General Electric is the only prominent exception. Their comparative stability through the panic, the liquidation which followed and, still later, the exceedingly quick market, is beginning to attract the attention of investors. The industry, while reduced to a lower cash basis, has not been in any sense crippled, as lower prices have been, in a measure, offset by a less cost of raw material and labor, and by a heavier demand stimulated. The field is not like that of the railroads, the iron industry or innumerable others which have been farmed out and completely developed. The virgin soil is great in extent, and must be considered as one of the heaviest assets of the electrical industry.

During the week the New England Telephone and Telegraph Company declared a quarterly dividend of 1 per cent, payable November 15.

On the Boston Stock Exchange, American Bell Telephone fluctuated between 199 and 200 on limited transactions. Erie Telephone declined from 54 to 51 to 52½. General Electric preferred was steady at 65 and New England Telephone was steady at 67 to 67½.

Westinghouse securities are showing remarkable strength. They are comparatively quiet. The movement which occurred from time to time is towards fractionally higher prices. Last week the common stock was bid 35½ and held at 36½. The preferred stock was bid 53 and held at 53½. Fort Wayne Electric is stationary at 2 bid and 2½ asked.

Of the less active stocks on the New York Stock Exchange, Edison Electric Illuminating, of New York, was quiet at 100 bid and 101 asked. Postal Telegraph is 50 bid and 60 asked. American Telegraph and Cable was sold at 91. BAIN.

New York, October 27.

The Thing That Killed It.

[*From the American Machinist.*]

A special press dispatch from St. Louis says:

The case of Dr. Wellington Adams, who has been suing for infringement of patents all street railway companies using electric motors, was dismissed in the Federal Court to-day. This kills the project for an electric line between St. Louis and Chicago.

It has for some time been thought that something would "kill the project." We had thought that the claims put forward by the projectors would suffice to kill it, and, in fact, they did kill it, only the projectors did not appear to be aware of its defunct condition.

Mr. Cummings, Do You Sell Your Electric Carriages?

TO THE EDITOR OF ELECTRICAL REVIEW:

In your issue of May 30, 1894, you have an article on the "Cummings' Electrical Carriage." Can you inform me if Mr. Cummings has made any of the carriages for the market; also, if in your opinion the device is practical? Can you give me Mr. Cummings' address in Chicago? Any information in the matter will be gratefully received as I am very much interested. Yours very truly,

INQUIRER.

Buffalo, October 16, 1894.

THE POUGHKEEPSIE CITY AND WAPPINGER'S FALLS, N. Y., ELECTRIC RAILWAY.

CHANGING A HORSE RAILWAY TO AN ELECTRIC ROAD.

In the conversion of this road from horse to electric traction, it was deemed advisable, in view of the substantial character of the horse stables and car barn, to utilize the existing buildings. To this end, the old brick horse stable, 63 feet square and 25 feet high, was remodeled by the removal of the interior studding and beams, and the building of a central 12 inch brick partition. The two rooms formed by this partition wall have been utilized for boilers and engines respectively.

The boiler room contains two 300 horse-power Stirling boilers, and is of capacity sufficient for a duplicate battery. It is floored with brick, laid in cement and grouted. In the engine room are two 200 kilowatt General Electric multipolar generators, each of which is direct connected to a 300 horse-power Ball & Wood compound condensing engine. The foundations for these units are of extremely heavy masonry. As in the boiler room, there is here space for duplicating the plant. The condenser, feed water heater and boiler feed pumps are located in the rear of the engines and close to the division wall. All of the piping is carried in pipe channels below the floor line, the floor being composed of 12 inches of concrete surfaced with an inch of Portland cement. The pipe channels are provided with cast iron covers, set flush with the flooring, this arrangement affording ready and convenient access to any part of the piping system.

The switchboard is built up of black enameled slate slabs of the General Electric panel type. The dynamo leads run beneath the floor in vitrified pipe conduits. In general effect the interior of the power house is extremely pleasing; the walls are painted in buff and in the engine room there is a Portland cement wainscoting, capped with a three inch pine nosing. There is an abundance of light and ventilation and the metamorphosis of the old stable is so complete as to defy detection. The old car barn has been entirely remodeled and largely increased in space and convenience. The roof was raised four feet, an extension 30x90 feet added and an entire new front constructed, containing the superintendent's office and a waiting room on the first floor, with large and commodious general offices on the second floor and the storage rooms in the basement. The repair shop is situated in the basement and provision has been made for the comfort of the employés by devoting a suitable room to their exclusive use. The superintendent's office and the waiting room are handsomely finished in paneled cherry wainscoting with ornamental steel-pressed walls and a delicately tinted ceiling.

The entire car house is in practically two sections, the longer being 194 feet in depth and the latter 90. There are six tracks in all, four having direct access to the street, the other two being spurs connected with the Hathaway transfer table, which cuts across all six tracks near the transverse center of the building.

Several car pits are provided under each track. A convenient place for coal storage is provided under the west car house, giving ready access to

MR. J. H. VAIL, CHIEF ENGINEER ELECTRICAL AND MECHANICAL ENGINEERING AND TRADING COMPANY, NEW YORK.

the boiler room. This provides a space for a storage of upwards of 1,000 tons of coal. Messrs. Berger & Slater executed the mason work, while Mr. Isaac G. Manning, of Poughkeepsie, attended to the wood construction.

The track system consists of 10 miles of single and double track laid through the streets of the city. A spur 10 miles in length reaches from Poughkeepsie along the Ridge Road to Wappinger's Falls and thence to New Hamburg. The heaviest grades within the city limits occur on that portion of the line leading from the steamboat landing on the Hudson River, near the New York Central depot, up Main street for about one mile. The grades here vary from five to eight and one-half per cent. The track on Main street is laid with the best 90 pound girder rail, rails and special construction being furnished by the Johnson company. The remainder of the track is laid with 60 pound and 56 pound T rails. The track is bonded throughout with two No. 0 Brown and Sharpe copper wires, riveted in place, all of the electric bonding being performed by the employés of the railroad company under charge of the superintendent.

The line leading from Poughkeepsie to Wappinger's Falls is nearly straight in its course, the grades varying from one to eight per cent. Between Wappinger's Falls and New Hamburg, where the track leads down toward the Hudson River, the grade is as heavy as nine per cent.

The line construction consists of the usual form of stout octagonal hard pine poles with treated butts. These are set up on Main street and Market street, the remainder of the poles throughout being round, shaved and painted.

Span wire construction is used throughout the city; bracket construction is used on the line leading to Wappinger's Falls and New Hamburg. The trolley wire is No. 0 Brown & Sharpe, supported by five-sixteenth inch stranded steel span wire. The line material is of the H. W. Johns company's manufacture.

Feeders of 0000 Brown & Sharpe wire are placed as required for electric distribution within the city limits. An interesting feature of the feeding system is the application of the booster idea to the long distance feeder from the power house to Wappinger's Falls. The feeding point is eight miles from the station, with a nine per cent grade two miles beyond the end of the feeder. By the use of the booster it is possible to properly supply this section of the line through two 0000 Brown & Sharpe wires. The track construction, including bonding, was under the charge of Superintendent C. M. Davis, of the railway company.

The rolling stock equipment consists of eight closed motor cars, 18 feet in length, built by James A. Trimble, of New York; 10 open motor cars, 30 feet in length, built by the American Car Company, of St. Louis, Mo.; and two closed vestibule cars, made by the latter company. All motor cars are mounted on the latest type of Peckham cantilever truck.

The electric equipment of the cars consists of two G. E. 800 motors per car, with type K series multiple controller. All cars are fitted with the Star electric headlights, and all closed cars with the American Car Heating Company's electric heaters.

The entire engineering supervision of the work has been under the charge of Mr. J. H. Vail, Chief Engineer of the Electrical and Mechanical Engineering and Trading Company, of New York, from whose offices all plans and specifications were issued.

The new electric railway will supplant an extensive passenger and express stage business between Poughkeepsie and Wappinger's Falls. It furnishes convenient transportation facilities between the river front and the higher urban localities, such as Vassar College, the Seminary, the Driving Park, the Insane Asylum, the P. and E. R. R. depot and the Cemetery. The same accommodations are offered at the New Hamburg end of the line, which reaches down to the river front.

Major J. W. Hinckley, the enterprising and energetic president of the railway company, has taken great personal interest in the construction of the entire system, and the citizens of Poughkeepsie will be largely indebted to him, as the means of furnishing in their city a first-class electric railway system.

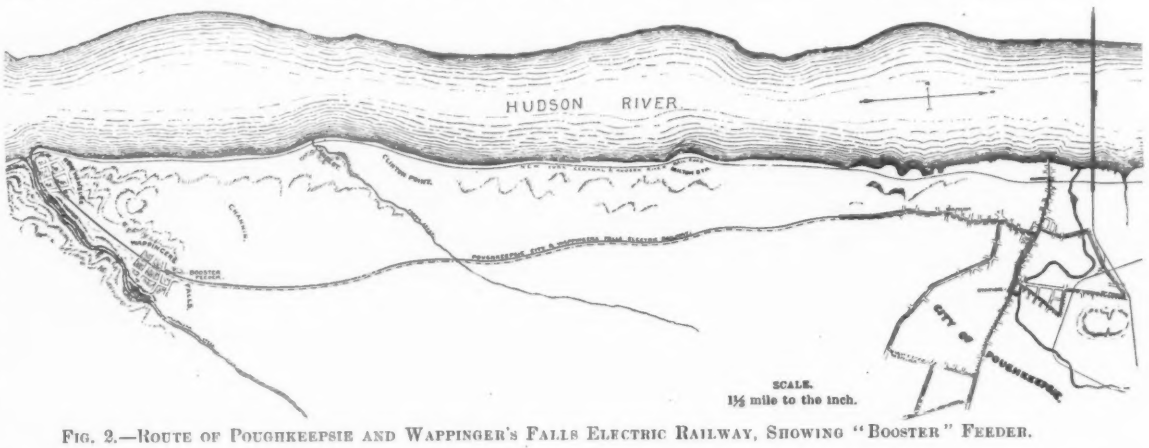


FIG. 2.—ROUTE OF POUGHKEEPSIE AND WAPPINGER'S FALLS ELECTRIC RAILWAY, SHOWING "BOOSTER" FEEDER.

Interesting and Valuable as Usual.

[*From Atlanta Convention Notes in the Electrical World.*]

The ELECTRICAL REVIEW took advantage of the occasion to distribute to the delegates a special number devoted to street railway interests, which contained much interesting and valuable matter. To distinguish this number from one of its regular issues the covers were printed in red ink, which imparted to it a very striking and conspicuous appearance and excited favorable comment on the part of those present.

Brooklyn Electrical Society.

The Brooklyn Electrical Society held a regular meeting on Thursday evening, October 18, 1894, at eight o'clock, in the new lecture rooms furnished by the Edison Electric Illuminating Company, at their central power station, 360 Pearl street, Brooklyn, N. Y.

A paper was read by Mr. Thomas A. Bamford, treasurer of the society, who took for his subject, "Telephony up to Date," illustrated by stereopticon and apparatus.

Kenfield-Sweeney.

Mr. Fred. Standish Kenfield, of the *Street Railway Review*, Chicago, and Miss Amy Sweeney were married at the bride's home in Rock Island, Ill., on October 24.

ELECTRIC LIGHT FLASHES.

The electric light plant at Gorham, N. H., is nearly finished.

The voters of Salem, Mo., have decided against electric lights.

Crestline, Ohio, has voted not to establish an electric light plant.

The Jenney Electric Light and Power Company, of Pekin, Ill., has surrendered its charter.

The Red Lake Falls Milling Company, of Red Lake Falls, Minn., will install a 200 light plant.

There is good prospect of an electric light company being organized at Moberly, Mo. Mr. J. S. Bowers is interested in putting the scheme through.

The town of Hull, Mass., has purchased the plant and franchise of the Hull Electric Lighting Company, and taken possession of the property. The town bonds to pay for the plant have been floated.

Our merchant countrymen John Baker has solved the much vexed question of lightning such places as ours. In a few days he will have electric lights from his machinery of milling.—*Lawrence, Kas., Journal.*

The city authorities of Newark, N. J., have decided to recommend to the Board of Works that all electric wires on the city thoroughfares be put under ground as soon as possible, and that where there are no conduits, they shall be constructed.

The Oskaloosa, Ia., Edison Light and Power and Land Company has gone into a receiver's hands on account of the default of $50,000 of bonds and interest for two years. The assets consists of the electric plant, 60 acres of suburban land and the franchise of the city lighting with the city contract.

The Edison Electric Light Company began two more suits in the United States Circuit Court at Chicago, on October 16, against manufacturers of incandescent lamps for alleged infringement of the original Edison patent. The defendants in one case are Adolph F. Opperman and the New York State Electric Company, and in the other C. E. Woodruff, Andrew Shillingham and J. F. Rigel.

The Palatka, Fla., Gas Light and Fuel Company has purchased an electric plant, and will have it erected at once. When completed, the company will be prepared to furnish the city with arc or incandescent lights in addition to the gas service, which will be continued. The officers of the company are: G. Loper Bailey, president; C. J. Hayes, superintendent; R. F. Adams, secretary and treasurer.

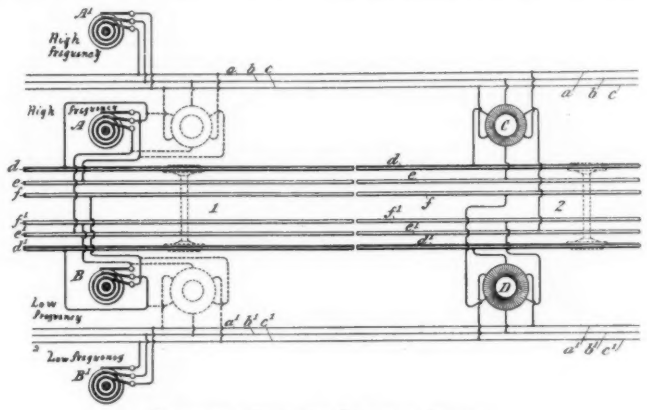
An important matter has been decided by the Common Council, in that they have confirmed the long-standing contract between the Public Lighting Commission and the Peninsular Electric Light Company for the purchase of 136 standing Brush towers for $525 each. The contract was made several months ago, but the Council refused to confirm it, and it has been hanging fire ever since, greatly delaying the work of the Commission.

Beginning November 1, the Hartford, Conn., Light and Power Company will furnish motive power for the East Hartford, Burnside and Glastonbury lines, the Wethersfield line and the Farmington avenue line of the Hartford Street Railway Company until the company's power in its new power house can be utilized. The power has heretofore been furnished by the Hartford Electric Light Company, which supplies the city with street illumination.

A double track electric railroad to connect Bay City and Saginaw, Mich., is proposed.

Bradley's Electric Railway System.

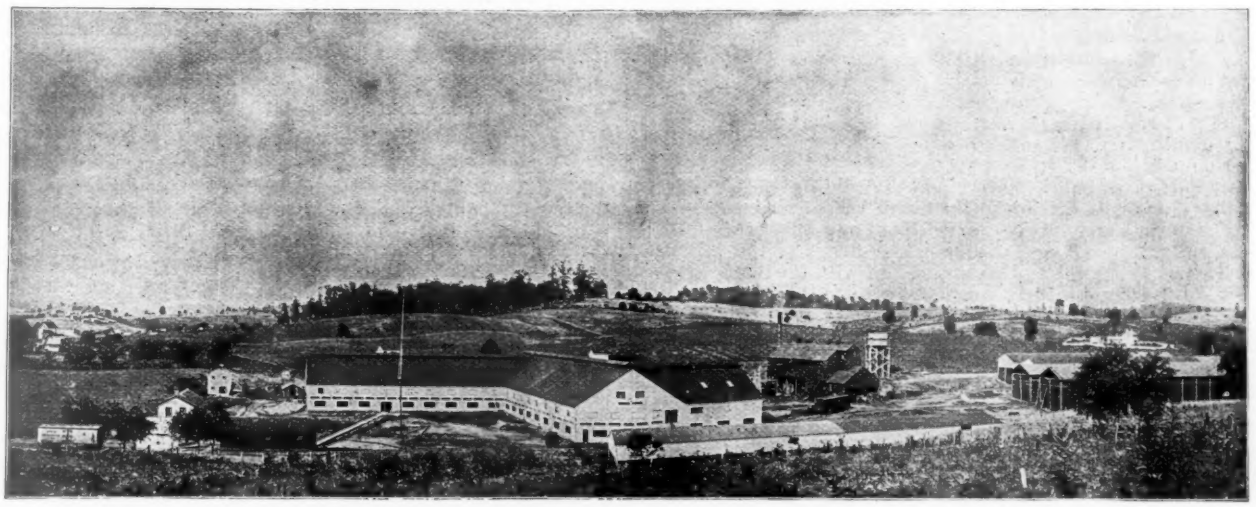
In the operation of railway systems, such as elevated railways where the stations are but a short distance apart and frequent stops are therefore necessary, much time is lost in getting the trains under headway and bringing them to a stop. It is desirable that means be provided for producing a rapid acceleration of the trains to the maximum speed. Means for effecting this end are described in a late patent issued to Charles S. Bradley. Mr. Bradley's system is shown diagrammatically in the accompanying engraving. He provides the line of travel with two supply circuits carrying alternating currents of different time-periods or frequencies, one of which is designed to operate the motors at high speed and the other at low speed. For railway lines of such a length as may be supplied throughout their length by currents of ordinary voltage a single generator for each frequency will be sufficient, but in long lines it is more economical to employ four generators, two of high and two of low frequency, but differing in voltage. Such a system is diagrammatically shown in the engraving. Triphase generators and motors are employed, two rails being used as one common lead and four auxiliary rails being employed, one pair devoted to the high frequency currents and the other to the low frequency currents. Each motor car is supplied preferably with two polyphase motors under control of the motorman and a switch by which either the high or low frequency mains may be put in connection with the motor, and by which also the order of delivery of the currents may be changed with respect to the motor winding so as to go ahead or back. Thus, in starting the switch will be set so as to connect the low frequency circuit and a comparatively slow speed of the motor will be developed with correspondingly increased torque. After the train has attained a certain degree of acceleration the high frequency circuit will be brought into service and the motor will be actuated at a much higher rate of speed. Current is led to the motors by a series of roller or brush contacts mounted on the train. By thus changing the frequency great starting torque may be developed and high speeds maintained. This result is ordinarily obtained by starting resistance cut into and out of the motor circuits; such devices are not only expensive to construct, but are liable to derangement in service. By employing two different frequencies such regulating devices may be entirely dispensed with, since the difference in speed may be simply attained by cutting in the proper circuit. The motor may, therefore, be made of the most solid kind of construction and is adapted to stand without damage the hardest service to which it may be subjected.



BRADLEY'S ELECTRIC RAILWAY SYSTEM.

A New Old-Fashioned Leather Belting Tannery.

Chas. A. Schieren & Company, Ferry and Cliff streets, New York, makers of the well-known "Electric" perforated belting, have a fine new tannery at Bristol, Tenn., where they are tanning leather by the old-fashioned process with pure oak bark. They are making leather that is especially adapted for leather belting purposes. The capacity of the Bristol tannery is 200 hides per day and the tanning is done in Tennessee, because that is the heart of the best oak bark regions.



HAIR HOUSE, OFFICE, HIDE HOUSE, MAIN TANNERY BUILDINGS, BARK SHED, BOILERS, LEECH HOUSE, BARK SHEDS.

CHAS. A. SCHIEREN & COMPANY'S OAK BARK LEATHER TANNERY AT BRISTOL, TENN.

The output of the American Bell Telephone Company for the month ending October 20 was as follows:

	1894	1893	Inc.	Dec
Gross output,	8,828	5,129	3,699	....
Returned,	5,482	6,811	...	1,329
Net output,	3,346	def. 1,682	5,028	...
Since Dec. 20:				
Gross output,	71,206	72,291	....	1,085
Returned,	59,128	52,520	6,608	....
Net output,	12,078	19,771	....	7,693

TRANSFERS ON STREET RAILWAYS.

ABSTRACT OF A COMMITTEE REPORT TO THE AMERICAN STREET RAILWAY ASSOCIATION, ATLANTA, GA., OCTOBER 18, 1894, SUBMITTED BY J. N. BECKLEY.

A liberal transfer system, properly guarded to prevent fraud, pays. This is, I think, now generally recognized. Local conditions and arrangements of lines must be considered in determining the regulations to be adopted. The rules intended to safeguard the company are important. Perhaps equally important is the making of rules broad enough to encourage riding.

If a transfer system is adopted, it is best not to hedge it in too much by narrow restrictions or to so complicate its details as to involve labor and expend money unnecessarily. It is expedient also to appear to be making most liberal concessions to the public, especially as such concessions, presumptive or real, conduce to our own benefit. The punching "to and from"—the limit of privilege to use at absolute junctions as fixed spots—different forms and even different colors for different issuing lines, may, in most cases, be avoided. If we secure a proper form of ticket, we can be protected in less complicated ways, and it is usually possible, with careful arrangement, to cover all requirements in one form. If series and consecutive numbers be employed, we can easily trace all issues by them instead of by old methods. If we use the series and consecutive numbers, we allot a certain quantity of tickets to each conductor and follow him by them, and should avoid minor details that interfere with or complicate the more important ones.

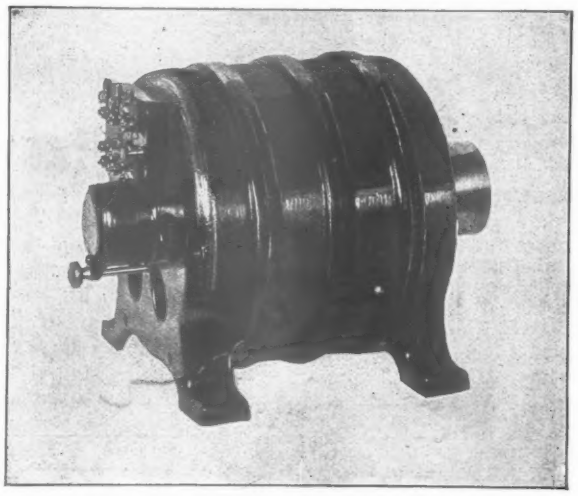
The ticket should be of liberal size to permit legible type and prevent crowded matter. It should be bound in pads of 100 and the pad be so exactly arranged as to permit punching 10 or more in one action of the punch. This feature permits canceling the month and day and often the time, 10 or more at once and accurately and frequently several of the same destination. It is of great advantage to secure full "month," "days" and "time" space on each ticket—that can be accurately and quickly punched, and it forestalls the waste, expense and detail consequent upon daily dated tickets, while it gives equal protection without delay anywhere.

The subject matter ingeniously arranged can and should comprehend in one form all needed rules. "Good for this current trip—at point of change—on next car after time canceled—to destination punched," illustrates this. "Subject to rules of company," covers several dozen words of the old form with equal rigidity. Special conditions may vary this, but in most cases it is restriction enough.

"A series number," "conductor's number," "run of car number," or some such designation on each ticket will identify the issuer perfectly, and the consecutive number will trace the issue, hold it to sequence in use and prevent tampering and fraud. We have some 200 conductors. Each has a stock of 25,000 tickets to begin with, renewed as used. One transfer department has 250 compartments on the wall of the room to hold these tickets (thus providing for increase in conductors), each of 25,000 capacity, so they are all systematically arranged in simple order, one compartment for the tickets of each conductor. The conductor turns in his unused transfers at the end of the day's work and they are put in his compartment, and given out again to him on beginning work next day. A simple record book keeps this account; one double page for each conductor covers his transactions for the whole year, and shows at a glance each individual transfer account for comparison or aggregating statistics.

Forenoon and afternoon are distinguished by light and black print in the destination blocks, and by the system we use we get month and day one punching each (but always preliminary, the conductor keeping these punched ahead in readiness), and one punch for time (even hour or 10 minute interval) and one for destination. I need not explain that such a ticket supplants the expensive duplex form, for it is equally protective, nor enter upon any argument in favor of the absolute need of a short time limit. The day limit, A. M. or P. M. limit, or even the hour limit is of a bygone day, too leaky to be considered and very few companies now use it.

It is important, in my judgment, to arrange the form clearly, each section—name, rules, time, days, months, destination, series and consecutive number—to have a distinct and spacious position and be clearly defined by itself, not scattered about. It is also very important, in order to foster accuracy with rapidity, to so



GENERAL ELECTRIC COMPANY'S SMALL INDUCTION MOTOR.

arrange the reading matter that the ticket shall be punched and read as punched, all one way, being held by thumb and finger of the left hand and punched with the right. Inverting and twisting the ticket not only takes time, delaying traffic, but increases inaccuracy. The ticket should be arranged in every detail so as to be within the mental grasp of the average conductor, and so as to make it easier for him to go right than to go wrong, easier to be quick than compelled to be slow. Regular horizontal and vertical lines soon fix themselves on the dullest intellect, but scattered details, hopping about a ticket, often puzzle the brighter ones.

In order that all punching may be done before tearing off the ticket from the stub, and that all possible advantage of the pad form and multiple punching can be secured, all sections to be punched should be arranged on the lower side and right hand end if possible.

The pad form saves counting the hundreds, while the consecutive number counts the broken pads. The pad form is most convenient in handling in the office or on the cars, and saves time wherever used in giving out, in issuing or receiving or in taking stock. The use of the months is not important. If there be room for them there is no objection, as with the pad form they are no obstacle to quick service, as they can be punched in advance of use. Many companies omit them as the other restrictions practically give little opportunity for fraudulent use after 30 days. By beginning the consecutive number of each pad at 0, 100, 200, etc., we save complication in subtracting, as then the consecutive number on the upper remaining ticket instantly shows how many tickets have been removed.

The consecutive number is not only useful in counting, but compels proper use of the tickets. In conjunction with the time table each ticket must show when turned in that it was issued in sequence of number and in sequence of time. No. 6,230, say, is issued at 9.30 A. M. Nos. 6,231 and 6,232 may not be returned at all, but if they are they must show issue in direct sequence of time. If not so, the series number tells us instantly who issued the ticket, and the man is spotted and the wrong exposed, for tickets cannot be abstracted and punched for future use, as they will not fall within proper time limit and in proper sequence. We make conductors note on the daily car report the consecutive number of the transfer with which the day's work begins and the consecutive number with which it ends. At the close of each trip each conductor turns in the transfers taken in on such trip in a special trip envelope, dropping them in a box prepared for that peculiar purpose. This box is placed at our grand junction which all cars pass, but a number of such boxes could be used where different conditions obtain. We know at once who wrongly issued a transfer, and who received it and when it was done. A notice in our cars requires the passenger to ask for a transfer when fare is paid. This rule enables the conductor to issue transfers at his convenience, and distributes the labor of so doing instead of massing it at certain junctions, with confusion and delay.

Nor is it necessary to resort to tickets on a roll or in metal clasps or such devices for protection. The roll method necessitates single issues, singly punched, and loses the advantage of multiple punching, while it delays traffic and increases chances of error. The metal bound tickets add expense, but do not increase protection. Tickets may be just as easily abstracted in advance of proper use as in the pad form—so they may in the roll, for that matter. Real protection lies only in the system, not in the binding. Conductors cannot sell, trade or exchange transfers with series, consecutive numbers and time table without detection, and if the transfers be turned in on every trip detection is a very simple process, requiring no elaborate and costly inspection.

A special register for transfers, and so eliminating their cash value, doesn't help us. It confuses the conductor and paralyzes the spotter, and without a protected form of a ticket, conductors can collect fares and ring them up on the register and turn in each other's transfers to balance the account.

By putting the transfer business into the hands of the conductors, we cater to the convenience of passengers, and we obviate delays in traffic consequent upon stopping cars to transfer. We save the large expense of transfer agents, and, in my judgment, do not increase leakage, for it is as easy for transfer agents to stand in with conductors to defraud the company as it is for conductors to combine with each other. The numerous and continual frauds perpetrated upon transfer agents, by people who get transfers without having paid any fare, is too well understood to require discussion. We have adopted a system of "faces identification" for moral effect, and especially for use at the noon hour, when abuse in tranfers is most frequent. As soon as we have converted our stock of tickets to the new form, we shall put them into effect. They are, I understand, now in use in Minneapolis, St. Paul, New Haven, Binghamton and Scranton.

In conclusion, I need only add that our liberal system of transfer has proved a good investment, and that our form of ticket is efficient and protective. Simple, convenient and safe, yet systematic, distinct and businesslike, it protects our interests, while it saves us all former waste and a vast amount of useless labor.

General Electric Company's Small Induction Motor.

A good example of the smaller line of induction motors which the General Electric Company is placing on the market is that known as the T. I. one horse-power shown herewith. This motor has been designed to give a powerful starting effort without excessive current. It is almost completely enclosed and may be entirely so if desired. It is totally without moving contacts, and the only connection it has with the external circuit is through the binding posts on the outside of the motor. The armature has no connection with the external circuit. Inside of the armature is placed a resistance, only kept in circuit when the motor is first started. The plug shown on the side of the motor under the bearing short circuits this resistance as soon as the armature has attained its speed. The motor is wound for 110 volts, and owing to the simplicity of the winding and the low potential, burn outs are almost impossible. The absence of commutator and collector rings obviates all danger of sparking and entails the minimum amount of attention in operation. As regards efficiency, uniformity of speed and output per pound of weight, this motor is equal to the best continuous current motors of similar output.

A war between the rival street car lines of Savannah, Ga., has been in progress all Summer, and fares have gradually been reduced until recently one of the lines announced two rides for one cent. The rival company will meet the cut.

Will the American Bell Sell More Stock?

It is reported from Boston that it has been decided to call a special meeting of the American Bell Telephone Company, accept the legislative act regarding the selling of increased capital by auction and offer stock to the par value of, say, $500,000.

We think we can safely say that the directors of the Bell Telephone Company have not as yet taken any decisive action looking to the calling of a special meeting of the shareholders to either accept or reject the act as passed by the last legislature. At the same time the necessities for the development of the company are such that it is likely that within a comparatively short time, certainly before 1895, a special meeting of stockholders will be called. The opinion is growing that it might be well to try the experiment of selling stock by auction in a small way, say $1,000,000. If the experiment fails it will simply confirm the idea of certain large interests that it would be better for the company to go out of the State. The development of the company and its services to the public would be far ahead of what it is today had it not been for the restrictions placed upon the company through legislation.—*Boston News Bureau.*

Mr. Louis Mouquin's Dinner.

The popular young restaurateur, Mr. Louis Mouquin, gave a dinner Saturday evening to about 50 of his friends, celebrating his "farewell to bachelorhood." Mr. Mouquin is to be married November 3.

The dinner was highly enjoyable and prepared in a most appetizing way. Everyone present extended cordial well wishes to Mr. Mouquin, and at a late hour, carrying the tag thoughtfully provided each plate, the happy guests separated. Among the electrical gentlemen were the following: H. D. Cheever, T. C. Martin, E. E. Bartlett, W. L. Candee, C. Von der Luhe.

New York Electrical Society.

A meeting of the New York Electrical Society will be held at Columbia College, Madison avenue and Forty-ninth street, on Thursday evening, November 1, 1894, at eight o'clock. Mr. Joseph Sachs will lecture on the following important subject: "Is there a Solution of the Electric Conduit Railway Problem?"

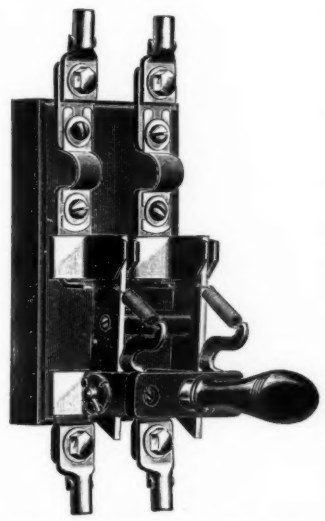
This lecture will be fully illustrated with lantern slides, showing the leading types of conduit construction, and the subject will be thoroughly elucidated. Several leading street railway men and electricians are expected to take part in the discussion.

Business Is Reviving.

President McDonald, of the Fort Wayne Electric Corporation, is among the men who believe that a business revival is gradually taking place. He says that the great factory of which he is the head is fairly overrun with orders, and that the outlook is better than it has been for years. Mr. McDonald is a thorough business man, and is making his rivals wonder just what his next move is to be.—*New York Recorder.*

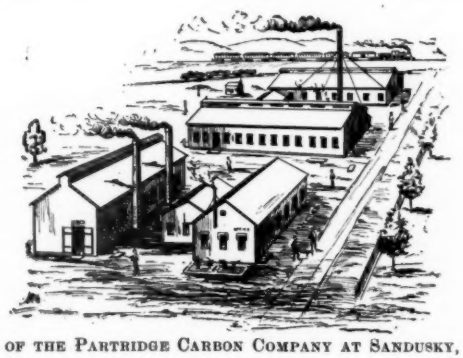
General Electric Company's New Switches.

The General Electric Company announces a new line of station switches to meet the demand for a reliable switch, which, sold at a low price, will nevertheless be as durable and effective in the work as the higher priced goods. It is known as the Coper snap knife switch, and differs from the generality of station switches



GENERAL ELECTRIC COMPANY'S NEW SWITCH.

in that the contacts and lugs, instead of being of cast metal, are of pure copper stampings, the contacts having ample contact surface to avoid heating and consequent loss. The hinges of the blades which move in the back contacts are so designed as to give excellent conductivity. The handle and cross bar are connected to the blades by strong spiral springs which pull the blade out with a quick break action, only after the spring is in considerable tension. Thus, the danger of an arcing is reduced to a minimum. The switches are mounted on bases of hard, white porcelain, made by the General Electric Company at its own works at Schenectady, and are constructed in sizes from 75 amperes to 300 amperes, double and triple pole, with and without fuse holders.



WORKS OF THE PARTRIDGE CARBON COMPANY AT SANDUSKY, OHIO.

A syndicate composed of a number of California capitalists is carrying on negotiations at Marshall, Mo., incident to the building of an electric railway between Miami and Sedalia via Marshall, Blue Lick and the great coal mines in that vicinity. Options have been procured on the mines and property on the proposed right of way, and it is reported that active operations have been commenced on the road.

Advertising Brings Success.

All men who advertise are not successful; but, with rare exceptions, all successful men have been advertisers.—*Portland Press.*

The Standing Ad.

The advertisement in a trade paper, read by people he wishes to reach, has a value to him above merely the orders it directly brings. He does not figure the value of the sign above his door merely on the basis of the patronage it happens to attract. It is there to tell everybody who passes, whether patrons or not, where his place of business is—it is a "sign" that he is in business there; so the ad in the trade journal is a "sign" year in and out, to those he wishes as patrons, that he is still in business.—*Maritime Journal.*

Howard Doesn't Like Trolley Sensationalism.

Commenting on a silly story published in the fake journal—and every reader knows the name of the fake journal—the ELECTRICAL REVIEW says: "How a New York cable car can operate on a Brooklyn trolley line is a matter for speculation and one which leaves the reader in doubt as to the genuineness of the whole story."

What reader? Doubt as to what? These fakes may have an occasional reader, but there isn't much doubt as to the "truth" of the yarns.—*Joseph Howard, Jr., in New York Recorder.*

Works of the Partridge Carbon Company.

The illustration on this page shows the works of the Partridge Carbon Company at Sandusky, Ohio, where the well-known Partridge carbon brushes for motors and generators of all systems are manufactured. Mr. Partridge, the superintendent of the company, has been making carbons for 17 years, and he certainly should know how to turn out an article of the first quality. The company is giving its entire attention to the making of carbon brushes, and is making a strong bid for orders in its special line.

LITERARY.

"Accurate Tables of Diameters, Areas, Weights, etc., of Cold Drawn Seamless Steel Tubing," by O. J. Edwards, is the title of a handy pamphlet for engineers. The tables are worked out to four places of decimals and are conveniently arranged for ready reference. The price of the pamphlet is 50 cents, and it can be ordered of the ELECTRICAL REVIEW.

GIBSON WINS.

DECISION IN THE COMBINATION FIXTURE PATENT CASE.

The Circuit Court of Appeals has finally determined the case of George Maitland against Alfred C. Gibson, of Philadelphia, trading as the Gibson Gas Fixture Works, by affirming, in an opinion delivered last week by Judge Acheson, the decree of the Circuit Court in dismissing the bill of complaint.

In this case the plaintiff claimed that by two letters patent, granted to Luther Stieringer, of whom he was the assignee, for fixtures for electric lights and for combination fixtures, he had the monopoly of hanging an electric light on a fixture attached to a gas pipe, whether the fixture was used simply for an electric light or whether it was used for electric light and gas. The patentee did not claim that he made any new style of fixture, but simply adopted the ordinary gas fixture, and by running wires down through the ordinary gas pipe, in a fixture used simply for electric lights, or between the iron pipe and the brass casing, where the fixture was used both for gas and electricity, he claimed that he had made an invention. The practical effect of this would have been that the ordinary gas fixture could not have been used for an electric light except by paying Maitland a royalty. The contest which has now been ended would, perhaps, have been of little public interest apart from the plaintiff's claims, which, upon their face, were preposterous, were it not that the Gas Fixture Trust, by obtaining practical control of the patents, endeavored to use them to coerce gas fixture manufacturers to join the Trust. In this they were to a considerable degree successful, but Mr. Gibson, having declined to join the Trust, concluded that he would fight the patents. He therefore contested the suit against him, and also fought the Gas Fixture Trust. The Trust has gone to pieces, and many of the people or companies who were in it have gone into the hands of the Sheriff or into the hands of receivers.

The Passing of the Street Car Horse.

Auctioneer—Gentlemen, I warrant every one of these horses to be a small feeder, equally good in single or double harness, easy under the saddle, perfectly safe with women and children, sound in wind and limb, no bad tricks, and not one of them over six years old. How much am I offered for the lot? How much? Start 'em along at some price—thank you! I am offered, gentlemen, 25 cents a dozen. Do I hear the 30?—*Chicago Tribune.*

Eugene V. Debs declares that the American Railway Union believes in the government ownership of railroads, telegraphs and telephones. Why not bakeries, shoe shops, saloons, furniture stores, boot-black stands and the American Railway Union as well?

THE BEST METHOD OF TREATING ACCIDENTS.

ABSTRACT OF A COMMITTEE REPORT TO THE AMERICAN STREET RAILWAY ASSOCIATION, ATLANTA, GA., OCTOBER 18, 1894, SUBMITTED BY P. M. DYER.

It is my purpose to explain to you in what manner the North and West Chicago street railway companies attend to personal injury cases, commencing with the accident and following the theme to the final disposition of the claim. These two corporations carried 167,000,000 passengers during the year ending December 31, 1893, and upon the claim department devolves the duty of investigating all accidents and the making of settlements, or preparation of the defense, in all claims that spring from this great traffic. One claim department does this work for both roads.

The working force consists of a medical staff and a sufficient number of investigators, all under the direction of the chief adjuster, who reports to the general counsel of the two companies. For the purpose of this article the work of the claim department may be divided into three periods, each separate and distinct from the others, as follows: First, investigation; second, negotiation; third, litigation.

First, as to investigation. The work of this period begins immediately after the accident and continues until there has been secured a full and accurate account of the accident, with reliable information as to the nature and extent of the injuries to person. Employés have been instructed to notify the claim department of the occurrence of an accident on car or train, giving circumstances of the same, nature of injuries to and residence of the injured, and, as far as possible, to secure the names of the witnesses. When this has been accomplished and the injured one has been placed in the charge of a physician or the police, the car or train may continue its journey. In the meantime a representative of the claim department will proceed with all possible dispatch to the scene of the accident. If the injured person has not yet been removed, he must see that conveyance is provided to the hospital or to the home.

These companies usually bear the expense of temporary medical care and transportation, without regard to liability, believing such attention is appreciated by the injured and the community at large. In all cases of personal injuries it is the duty of the medical staff to secure the privilege of an examination; the physician making the same to avoid any assumption of responsibility for the treatment, but to fully ascertain the nature and extent of the injuries, and to obtain, if possible, a concurrence in his report by the attending physician.

All employés witnessing accidents are required to make written statements of the circumstances of the same on printed forms provided for that purpose, attaching the names and places of residence of all witnesses. This report must be completed and given to the foreman before the employé finishes his day's duties. These reports are forwarded to the claim department without delay, and when received, circular letters containing printed interrogatories are sent to each witness. If the seriousness of the accident demands it, interviews are had with the witnesses. That the claim department may be kept fully advised from time to time as to the conditions of persons injured on these roads, they are occasionally visited during the period of recovery by the investigators assigned to those cases.

In Chicago, all hearings before the coroner are had immediately after the accident and the verdict of the coroner's jury is usually rendered on the day following the death. It is the policy of these companies to secure the presence of their witnesses at the hearing before the coroner and obtain stenographic minutes of the proceedings. Thus, in a comparatively short time the claim department will have collected much information as to the condition of the injured and the circumstances of the accident. We may now consider the work of the first period completed.

The reports relating to an accident could now be filed away perhaps forever, if it were not for the industry of some claim lawyer or other hustler who persuades the injured to make a demand on the company for compensation. The making of a claim leads us to a consideration of the second period, that of negotiation. Demand being made for compensation, it becomes the duty of the chief adjuster to place before the general manager or general counsel all facts within his knowledge bearing on the claim, for a decision as to liability, and the naming of the maximum sum to be paid, if a settlement is deemed advisable, the claimant being promptly informed of the decision. As to the negotiations preceding a settlement, I need say but little. They are usually conducted by the chief adjuster on the part of the company. If not successful, the period of negotiation will end, usually to be followed by litigation, the third and last.

After the commencement of suit all witnesses are again located by the claim department, and thereafter located at stated intervals until the time of the trial, and, if possible, additional witnesses are found to strengthen the defense. Success in defending suits arising from personal injuries largely depends on the character of the work done during the period of investigation. The officers of these companies believe in the thorough investigation of all accidents, if possible the settlement on a reasonable basis of all valid claims, in vigorously contesting fraudulent demands, and that prompt settlements are for the best interests of their companies.

In conclusion, I will say that the time is at hand when all railroad corporations must be prepared to resist claims in a large percentage of their accidents. To promptly prepare to do this is the part of wisdom, when considered from a financial standpoint, usually the determining consideration in corporate management.

ITEMS OF INTEREST.

The Probate Court for the district of Hartford, Conn., has allowed three months from October 22 for creditors to file their claims against the Capitol Electric Company, of Hartford. Leslie W. Newberry and George O. Pratt have been appointed commissioners to examine claims.

The dividend of $1 (one per cent) per share, declared last week by the directors of the New England Telephone and Telegraph Company, is the same amount as the previous dividend, but an increase of 25 cents over the corresponding dividend last year. As $1.25 was paid in February, 75 cents in May, and $1 in August, this dividend will make $4 (four per cent) per share distributed by New England Telephone this year, against $3.50 last year. Transfer books close October 31 and reopen November 16.

CAN THE T RAIL BE SATISFACTORILY USED ON PAVED STREETS?

ABSTRACT OF A COMMITTEE REPORT TO THE AMERICAN STREET RAILWAY ASSOCIATION, ATLANTA, GA., OCTOBER 18, 1884, SUBMITTED BY STRATHEARN HENDRIE.

We would preface our report by the explanation that we have considered the word "satisfactorily," as applying to the point of view of the city and the driving public, as well as that of the company; and we will endeavor to show that the T rail is not only satisfactorily used in paved streets, but that it is the best rail for the purpose.

The tendency of the larger cities in this country—in fact we might say in all the cities of this country—during the past 10 or 12 years has been towards smoother and better paved streets, and the general public, watching the progress of its city officials, has become in many places impatient of the action of the street railway people in maintaining the old forms of rail, which make a ridge on the smooth surface of a first-class modern street in an American city. Our travelers have come home from England and the Continent extolling the grooved rail, and our city officials have in many cases forced either the English grooved rail or its American modification upon the railway companies. No street railway man hankers after the grooved head before he gets it, or enjoys it after he has put it in, and he, therefore, fights its introduction, demanding to be left alone, as he was, with his center bearing or five inch tramhead. What we would show him—and through and beyond him his public—is that he can progress in the direction of their desires for a smooth street, and can give them something even more satisfactory to them than their favorite grooved rail.

For the street railway man, questions of price, joints, quick delivery, competition, coal pile and construction combine to recommend the T rail. The old argument for the tramhead—that the steel paving for the three inches is the cheapest in the end—no longer holds good in these days of good street pavements and rapid transit. Wagon traffic goes where it belongs—on the side of the street. To those who can still use the clean headed, old center bearing rail, we can only say, "You lucky dogs;" to most of us it is lost forever. As a substitute for this, where old grants are being renewed or new ones made, the grooved headed rail has been in many places hastily and, we believe, unadvisedly required. While the suggestion of a T rail, for use in paved streets in cities, is startling to the average citizen, alderman or city engineer, and is, in most cases, impatiently rejected by them, yet we must recollect that the mention of a rail, such as steam roads use, calls up in their minds the idea of four or five inches of steel standing up above the street and of delapidated plank crossings with half drawn spikes; and we should go patiently to work to teach them that as there is more than one way to supply motive power to a car, so there is more than one way of putting a rail in the street.

The general consensus of opinion of 26 roads (from which reports were received), and of the officials of the cities in which they run, is that if you can once get down a hundred yards of T rail and make a decent job of the paving, neither the officials nor the citizens will permit you to use anything else in the future. The main thing is to make your paving job a neat and good one. In three of the other cities, where there is at present no T rail, but which are blessed with enlightened city officials, the T rail is about to be made a requirement on the companies.

Modern street railway construction and street paving imply a broken stone, concrete or other solid foundation, a high girder or T rail and a brick, asphalt or granite surface to the street in the larger cities, or cedar block, cobble or macadam in the smaller ones.

Asphalt or macadam can be paved as easily to a T rail as to any other. They should be laid flush and room should be made for the flange by running a railroad freight car, or other car having a larger flange than the street car, over the track before it is opened for traffic. Bricks are now moulded by many paving brick manufacturers to fit girder and T rails, those for the latter allowing a space for the flange of the car wheel. Whether it is more expensive to chip the corners of granite or Medina blocks or to leave them intact a short distance from the head of the rail and fill the space thus made with asphalt, creosoted wood or concrete, is open to question, but in either case a first-class job can be made. The writer is familiar with two excellent pieces of 56 pound T rail construction on chairs, in one of which the pavement consists of six inch cedar blocks, and in the other of small three or four inch cobble stones, both paved close to the rail with no filling.

It may be useful in your arguments with city officials in favor of a T rail as against a grooved girder, to insist that a T rail is a girder rail with a head differing less from that of the grooved girder than this does from the tram or center bearing head. Also the substitution in this country of the steel base and upright member of the girder for the wooden stringer took place before the introduction of the grooved rail and was due to entirely different causes, and certainly has not been brought about by any demand for smooth streets originating with the cities or citizens. Such substitution is equivalent to that of steel for wood in buildings. The girder is an established fact; its grooved head, we hope, is merely a passing fancy. The grooved rail might easily be a big headed T out of which a piece corresponding to the groove has been planed. This can easily be shown by reference to cross sections. And we should bear in mind that if we hope to peacefully and with good feeling avoid the use of the grooved rail we must do so, not by demanding obstinately what we know in our inmost minds to be reasonably objectionable, to be bad practice, to be obsolete, but by presenting to the public and educating it up to it, a rail which shall, from its point of view, be as far ahead of the grooved rail as that is ahead of the tram or center bearing rail. And we should also bear in mind that the public will demand, and in the long run will secure, streets satisfactory to itself.

Your committee has not gone more fully into the details of construction from a street railway point of view because these must necessarily vary in different localities, but it suggests that the progress which has been made in girder rail construction in the past two or three years should not be lost sight of when we secure the T. Have it big enough and heavy enough.

The New England Telephone and Telegraph Company is at the present time doing an unusual amount of work in northern Vermont in the way of extending the metallic circuit service.

More About the Atlanta Convention.

The countenances of the officials of the association and others were immortalized in the *Constitution* by the pen of an Atlanta artist. Among other illustrations were those of Gardiner C. Sims, Nikola Tesla, Chas. F. Brush, R. T. McDonald, W. L. Candee, Alexander Graham Bell, Col. John N. Partridge, and J. H. Vail.

Mr. W. W. Kingston, of Atlanta, deserves most complimentary mention for the efficient and thorough manner in which he looked after the needs of all the street railway visitors. He did an enormous amount of work and did it well.

The Ball & Wood company were ably represented by Mr. C. R. Vincent and Mr. Langdon Greenwood, Jr. The engines manufactured by this company are as popular in street railway circles as in the electric lighting field, and that is saying a good deal.

A gentleman, eligible at all times to membership in the association of big men, is Mr. P. M. McLaren, of New York, who carries high poised wherever he goes the triumphant banner of the Abendroth & Root boilers. On this occasion Mr. McLaren had a few convincing words of interest to tell the railway men about the improved Root boiler, and he told them.

Secretary Geo. F. Porter, of the National Electric Light Association, attended the convention just to see how it felt to be at a gathering of electrical men and not be up to his ears with work. Yet no one should say it was a case of the——finding mischief for idle hands, for the popular secretary really behaved very well.

"W. J. Northen, Governor of Georgia, Atlanta, Ga.," is the way it reads in the ELECTRICAL REVIEW register, but the day this paper appears dates the close of the present governor's excellent administration. The people of Georgia highly esteem Governor Northen, and their best wishes, as well as the best wishes of all the convention visitors, will follow him to private life.

Mr. and Mrs. W. H. Venable extended many kindly courtesies to the visitors, and charmingly entertained a house party of Philadelphians on Saturday after the convention at their most hospitable country home at picturesque Stone Mountain. Mr. Venable, who was recently elected State Senator, will, in all probability, be elected president of the Georgia Senate—a wise choice.

ELECTRIC RAILWAY NOTES.

The new electric street railway at Marion is nearly completed.

Hereafter Philadelphia street cars will stop at the "near" crossing.

An electric railroad is to be built from Glen Rock to McKeesport, Pa.

It is predicted that electric cars will be running between Cincinnati and Cleveland, Ohio, by January 1, 1896.

A syndicate will build an electric railway between Tiffin and Upper Sandusky, Ohio, by way of Sycamore.

A charter has been secured for an electric road between Bethlehem and Nazareth, Pa. This sounds Biblical and modern.

The Detroit and Wyandotte Electric Railway Company are making a needed improvement in arrangements for the comfort of their patrons by the construction of a handsome depot at the River Rouge terminus of their road.

Mr. Edward H. Johnson's underground conduit electric railway system will be given a trial by the North Chicago Street Railway Company. The Johnson system has been illustrated and described in the ELECTRICAL REVIEW.

The president's report to the stockholders of the Binghamton, N. Y., Railroad Company shows the road to be in good condition. About 27 miles of track are in service and the operating expenses of 46 per cent in 1893 have been reduced to 43 per cent for 1894.

It is reported that a fund of $20,000 is being raised in Pittsburgh to carry on test suits against the Duquesne Traction Company to ascertain whether a street car company has a right to collect fares from persons obliged to ride hanging on by a strap in an overcrowded street car.

President H. H. Vreeland, of the Metropolitan Traction Company, New York city, announces that work has finally been commenced on the conduit electric road running from Lexington avenue and the Harlem River south to 116th street, west to Manhattan avenue and south to 109th street, where it will connect with the Columbus avenue cable.

A car house, to cost $1,000,000, is about to be built by the Metropolitan Street Railway Company in Seventh avenue, New York city, extending from Fiftieth to Fifty-first street. The structure will extend back to the company's cable power house, fronting on Sixth avenue. This will be a fine house for electric cars when electricity supplants the cable.

The city of St. John, N. B., a place of nearly 50,000 people, has been without any means of public transportation for several weeks. The trolley tracks are all being relaid, and instead of doing the job street by street, allowing the cars to run in some quarters of the city, all traffic has been suspended and the changes proceed with the greatest deliberation.

The question of the city of Milwaukee, Wis., buying its own street railway lines has been disposed of for the present by an opinion from City Attorney Hamilton, which finds that such a purchase cannot be made as the law now stands. The opinion was rendered at the request of Alderman Williams, who is a member of the committee appointed for the special purpose of considering the advisability of municipal ownership.

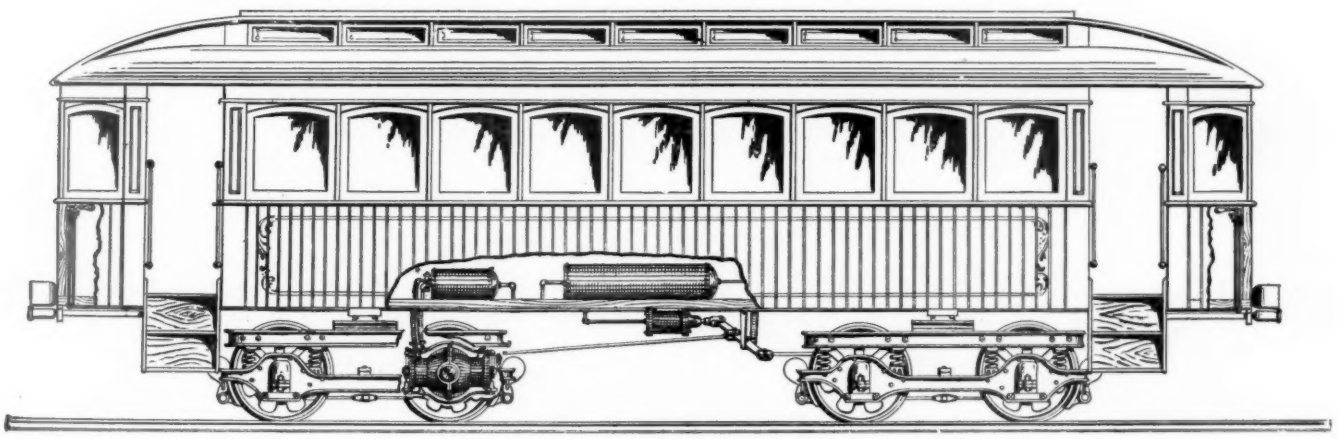
M. Barthou's plan for a metropolitan railroad for Paris comprises a section under ground from the Gare du Nord to the Hôtel de Ville, then above ground and across the Seine to the Halle aux vins, then under ground again to the Place Medicis, near the Luxemburg. Another section will run above ground from the Porte de Vincennes to the Halle aux vins, and a third section partly above and partly under ground from the Place Cluny to the Champs de Mars and La Muette, in the Bois de Boulogne. The cost is estimated at $20,000,000.

The engineers' plans, results of their partial surveys and other matters of importance bearing upon the financial prospects of the New York and Philadelphia Traction Company's trolley enterprise were presented to and discussed by a meeting of New York, New Jersey and Philadelphia investors in that line at the Hotel Metropole, in Philadelphia, last week. Joseph H. Reall presided, and there was a general discussion of the project. With an authorized capital of $10,000,000, the company is to build in sections its line, which will connect the main trolley lines of New York and New Jersey with those of the Philadelphia Traction Company. Including branch lines, this interstate trolley system will extend about 200 miles, and the object of its projectors is to handle express, mail, freight and passenger traffic.

The Genett Air Brake.

A satisfactory brake for the modern electric car, running on rapid transit schedule, is a device which street railway managers regard as a great boon. With a brake of sufficient power and quick action, the number of accidents caused by the rapid running demanded by the public, and the carelessness of that same public in getting in the way of swiftly moving cars, would be appreciably lessened, the claim department of the railway company would have less to do, and the amounts saved in damage suits would doubtless more than meet the increased cost of a proper brake. Street railway men and city authorities would accomplish more real good by devoting their attention to securing a quick and positive acting brake instead of experimenting with the hundreds of safety fenders brought before them—not that a safety fender is without its value, but as compared with the brake it is of only secondary importance.

The Genett air brake would seem to meet the requirements of the modern electric car. Its manufacturers, the Genett Air Brake Company, 33 Wall street, New York city, can furnish facilities for inspecting a large number of cars now using this brake in regular service on the street railways of the United States and foreign countries. The illustration on this page shows a car equipped with the

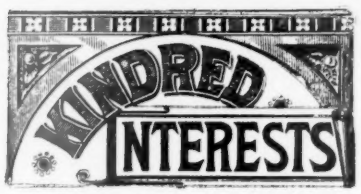


CAR EQUIPPED WITH THE GENETT AIR BRAKE.

Genett brake, which consists of but six principal parts—the air pump or compressor, the brake cylinder, the regulator, controlling valve, main reservoir and auxiliary reservoir. The air pump is attached to the car axle, and is double acting. It generates the compressed air, and during the movement of the car through 360 feet enough air is compressed for 10 stops. All the working parts of the pump are enclosed, thus making it dirt, slush and waterproof. It requires no attention for weeks at a time except an occasional oiling.

The brake cylinder is a piston rod arrangement which acts positively on the brake lever and obviates the necessity of using multiple levers, rods or chains, such as are required with hand or friction brakes. With a brake cylinder eight inches in diameter and an air pressure of 35 pounds, a braking power of 1,759 pounds is developed. The brake is actuated by the operation of a small lever placed conveniently for the motorman.

An important feature of the Genett air brake is that the pump is automatically cut out when full reservoir pressure is obtained, and is kept cut out when the car is started so as not to consume power at such times.



The Genett Air Brake Company, 33 Wall street, New York city, has issued an air brake catalogue which should be in the hands of all electrical railway managers. It may be had free by mail on application.

The American Carbon Company, Dayton, Ohio, report that business is good with them. Their large works at Noblesville, Ind., are of the most modern type and of sufficient capacity to handle any size order for carbons.

The H. W. Johns Manufacturing Company, New York, have issued a neatly executed pamphlet entitled "Heat Insulation and Fire Protection in Prominent Buildings," showing where their well-known asbestos pipe and boiler coverings are in use.

Mr. Aleck H. Lewis, Perin Building, Cincinnati, Ohio, agent for the Abendroth & Root Manufacturing Company, reports that the demand in his territory for the well-known Root boilers is rapidly increasing. Mr. Lewis is erecting several large installations of Root boilers in Cincinnati and vicinity.

The Brown & Sharpe Manufacturing Company, Providence, R. I., have issued a new pamphlet on cutters. The illustrations are unusually handsome. Anyone interested in the subject of cutters can have a copy by asking the Brown & Sharpe Manufacturing Company for it.

Chas. A. Schieren & Company, Ferry and Cliff streets, New York, have received the following letter from Alfredo De Rosenzweig, an electrical engineer at Guanajuato, Mexico:

"In November or December, 1893, I bought five perforated electric leather belts from you, each 15 inches wide, for an electric light plant in this city. These belts are giving excellent satisfaction. I know of no better class of belting for use in electric light work."

Mr. Hornberger has sold his entire interest—including patents—in the Hornberger Electric Manufacturing Company, of Elkhart, Ind., to Mr. J. C. Boss. Mr. Hornberger founded the above company nearly five years ago. The Elkhart transformer has been the principal article of manufacture. Mr. Hornberger will doubtless still be identified with the electrical field as he has other active interests in electric lighting and street railway circles.

The Niles Tool Works, Hamilton, Ohio, has issued an exceptionally well prepared catalogue of its machine tools. The book consists of 244 pages and is cloth bound with an illuminated cover in gilt and colors. A view of the company's extensive works forms a double page frontispiece. The illustrations and descriptions of machine tools for iron and steel working, railway, car, boiler and machine shop equipments are prepared to give the intending purchaser the greatest amount of information with the least effort on his part. As an example of a first-class catalogue this one is in the front rank.

$6.00 for a $9.00 Book

Prof. Sylvanus P. Thompson's "Dynamo-Electric Machinery" is now supplied for **$6.00.**

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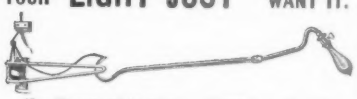

New Electric Light Holder. Pat'd June 26, 1894.

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Electrical Supplies,

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For oiling Crank and Cross-head Pins.
WM. H. WILKINSON,
352 Atlantic Ave., Boston, Mass.

Receiver's Sale.

United States Circuit Court, for the Southern District of New York. Charles F. Oxley, Complainant, against The Archer & Pancoast Manufacturing Company, defendant. Carlos French, Complainant, against The Same. Consolidated causes in Equity.

The undersigned, Receivers of all the property, assets and effects of the said corporation, the Archer & Pancoast Manufacturing Company, will sell at public auction, pursuant to a decree and order of this court made and entered herein and bearing date the 19th day of October, 1894, at the Real Estate Exchange, No. 111 Broadway, in the City of New York, by George R. Read, auctioneer, on Thursday, the 15th day of November, 1894, at twelve o'clock noon of that day, in one lot or parcel, and not divided or separated, all the property, both real and personal, and all the rights choses in action and effects of said corporation, said property being described as follows:

All that certain piece or parcel of land with the buildings erected thereon, situate, lying and being in the Twentieth Ward of the City of Brooklyn, County of Kings, and State of New York, and bounded and described as follows, to wit: Beginning at the point formed by the intersection of the southerly line of Flushing avenue with the easterly side of Carlton avenue, and running thence southerly along the easterly side of Carlton avenue one hundred and fifty feet and three inches (150 ft. 3 in.); thence easterly and at right angles with Carlton avenue forty-five feet and four inches (45 ft. 4 in.); thence southwardly along the land formerly of Sarah Ryerson and nearly parallel with Carlton avenue one hundred feet (100 ft.) more or less to a line drawn at right angles with Carlton avenue through a point in the easterly line thereof, distant two hundred and fifty feet and three inches (250 ft. 3 in.); southwardly from the southeasterly corner of Flushing and Carlton avenues, and to land now or late of Elizabeth Atthisar; thence eastwardly along said last mentioned land and line one hundred and twelve feet and three and one-half inches (112 ft. 3½ in.) to land now or late of Henry L. Clark; thence northerly along said last mentioned land and parallel, or nearly so, with Carleton avenue two hundred and seventeen feet and two inches (217 ft. 2 in.) to a point in the southerly line of Flushing avenue, distant forty feet and ten inches (40 ft. 10 in.) more or less westwardly from the southwestwardly corner of Flushing avenue and Adelphi street; and thence westwardly along the southerly line of Flushing avenue one hundred and sixty-three feet and five inches (163 ft. 5 in.) to the point or place of beginning.

And also all that certain lot, piece or parcel of land situate, lying and being in the said City of Brooklyn, bounded and described as follows: Beginning at a point on the southerly side of Flushing avenue twenty feet and five inches (20 ft. 5 in.) westerly from Adelphi street; [running thence westerly along Flushing avenue about twenty feet and five inches (20 ft. 5 in.) to land formerly of Phebe Kissam; thence southerly along Kissam's land about eighty-six feet and two inches (86 ft. 2 in.) to land heretofore conveyed by Henry L. Clarke and wife to Edward Marrin; thence easterly along said Marrin's land at right angles to Adelphi street about twenty feet and four inches (20 ft. 4 in.) to land formerly of James Traynor; thence northerly along said Traynor's land and parallel with Adelphi street about eighty-two feet and ten inches (82 ft. 10 in.) to the place of beginning.

And also all those two certain lots of land situate, lying and being in said City of Brooklyn, and bounded and described as follows: Beginning on the westerly side of Adelphi street at the northeasterly corner of a piece of land heretofore conveyed by Henry L. Clarke and wife to William E. Winant, which corner is two hundred and twenty feet and eight inches (220 ft. 8 in.) south of Flushing avenue; running thence northerly along Adelphi street thirty-nine feet and six inches (39 ft. 6 in.) to land formerly of A. McNeely, as conveyed to him by said Henry L. Clarke by deed recorded in Lib. 822 of Cons., page 464; thence westerly at right angles to Adelphi street and along said McNeely's land about forty-two feet five inches (42 ft. 5 in.) to land formerly of Phebe R. Kissam; thence southerly along said Kissam's land and nearly parallel with Adelphi street about thirty-nine feet and six inches (39 ft. 6 in.) to said Winant's land at a point continuous of a line drawn at right angles to Adelphi street from the place of beginning; thence easterly along such continuous line at right angles to Adelphi street about forty-two feet and six inches (42 ft. 6 in.) to Adelphi street at the place of beginning.

Together with all the right, title and interest of the said corporation, if any, in and to Flushing and Carlton avenues and Adelphi street, lying opposite to said premises, to the center of said avenues and street respectively.

Said four lots above described being covered by a mortgage for $55,000, made by Charles F. Oxley and others to John W. Hunter and another, as Trustees, and recorded in the Register's Office of Kings County, November 12th, 1887, in Liber 1950 of Mortgages, page 327, with interest at five per centum per annum from the 2d day of June, 1894.

And also all and singular the machinery, utensils, tools, implements, boilers, engines, stock, manufacturing materials, models, patterns, merchandise, fixtures, book accounts, claims, things in action, good will, trade mark, name or names, patents, letters patent, invention and patent rights and interest therein, and all rights, property, assets and effects of every kind and nature whatsoever of the said corporation, the Archer and Pancoast Manufacturing Company.

N. B.—No bid therefore for a less sum than $600,000 will be received, and fifty thousand dollars must be paid in cash by the purchaser at time of sale, and the balance of the purchase money within thirty days thereafter.

Dated New York, October 22d, 1894.

Archer V. Pancoast,
Alanson T. Enos,
Receivers.

Davies, Stone & Auerbach,
Attorneys for Receivers,
32 Nassau Street, N. Y.

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